A CHILTON PUBLICATION

the Iron Age

THE NATIONAL METALWORKING WEEKLY

March 26, 1953

UNIV. OF MICHIGAN

CONTENTS PAGE 2

MAR 27 1953
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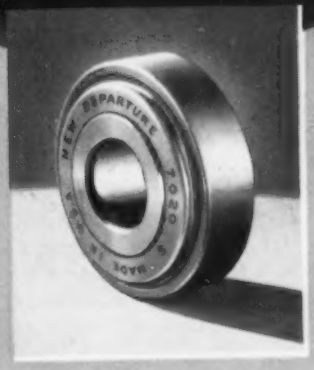
ENDURANCE...



This New Departure self-sealed ball bearing was removed in the twentieth year of its service in a grinder. No appreciable wear had occurred and the internal fit-up was still well within the tolerances of a new bearing.

TO THE ND DEGREE

In numerous applications, the life span of New Departure ball bearings has proven to be astonishingly long. Endurance to the ND degree means continuous, trouble-free operation for years, for decades, for the life of the equipment . . . *often without re-lubrication!*

New Departure originated and developed the sealed-for-life type of bearing. And all New Departure types lessen friction, wear and maintenance . . . make possible higher speeds, larger loads, better design.

Years of engineering experience in ball bearing application back up New Departure's field force—the finest and largest in the industry. These men, and the resources behind them, are at your disposal.

NOTHING ROLLS LIKE A BALL

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BALL BEARINGS

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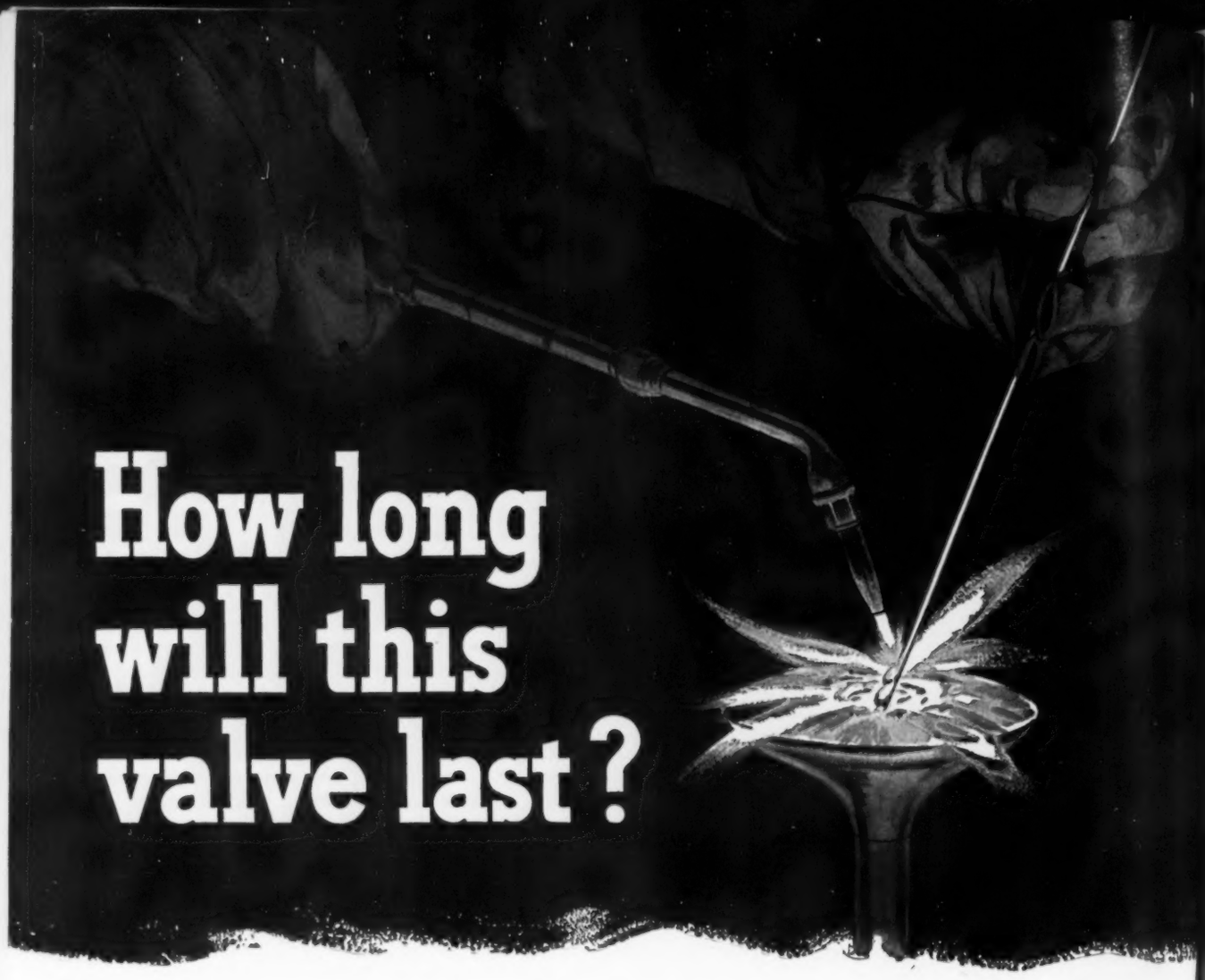
Also Makers of the Famous New Departure Coaster Brake



How long will this valve last?

Hoskins Chromel-Alumel thermocouple alloys accurately register exhaust temperatures of jet aircraft engines.

Hoskins Chromel give long life Heating elements made of service in industrial electric furnaces, home appliances.

Hot stuff for hot jobs! Hoskins Alloy 502 is widely used by industry for many heat resistant mechanical applications.

You're looking in on a life-saving operation . . . one that's being performed on an engine valve. Not an ordinary valve for an ordinary engine. But a valve destined for long, hard service in an aircraft, tank, or heavy-duty truck engine. A valve that must be made to stand up under extremely severe operating conditions . . . high temperatures, for long periods of time, plus the destructive corrosive action of hot exhaust gases.

And what's responsible for long valve life under such gruelling conditions? Nothing less than Hoskins Alloy 717 . . . a closely controlled nickel-chromium composition developed especially for just such tough and vital service. It's highly resistant to heat . . . immune to the corrosive atmospheres created by combustion of high octane fuels. What's more, it's readily applied by fusion to form a non-porous protective facing over the basic valve forging.

But 717 is only one of several specialized nickel-chromium alloys developed and produced by Hoskins. Among the others: Alloy 502 . . . known throughout industry for its dependability on a wide range of heat resistant mechanical applications. The Chromel-Alumel thermocouple alloys . . . unconditionally guaranteed to register true temperature—E.M.F. values within specified close limits. Spark plug electrode alloys which have become universally accepted standards of quality and durability. And, of course, there's Hoskins CHROMEL . . . the *original* nickel-chromium resistance alloy used as heating elements and cold resistors in countless different products.

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A Glimpse Of Hell

THINK with me as we witness an atomic blast—one heralded as a "small nuclear reaction." We are at "News Nob," 7 miles from Ground Zero, where the "device" is firmly planted atop a 300-ft tower. Your special dark glasses are on your head ready to protect you from the burst of light to come.

It is about 5 a.m., cold and dark. You and I pick a place on the nob and look down on lights, hundreds of cameramen and observers.

What will this be like? Is the bomb as dangerous as they say? Should we worry too much about it? Isn't it silly to think the Russians will attack us? Isn't the whole thing overrated? Isn't the government trying to frighten us? Those are a few thoughts that flit through some heads as we shiver slightly in the desert.

"Five minutes minus zero," the loud speaker booms. "This is warning to have your glasses ready. Next signal will be at 5 seconds minus zero." Suddenly something happens to you and me. A strange feeling of tenseness—not fear, it is worse than that.

"Five seconds minus zero" . . . we adjust glasses. Our knees start to shake, we don't know why.

"Four seconds minus zero" . . . thoughts run pell-mell into each other . . . awe . . . what's going to happen . . . will the newsmen and soldiers in fox holes 2 miles from Ground Zero suffer casualties?

"Three seconds minus zero" . . . you and I are now stunned, all thought has ceased. We brace against a rock and wait—for what?

"Two seconds minus zero" . . . knees won't stay still.

"One second minus zero" . . . you and I are alone waiting for "it."

It sears its memory upon our brain. It is a thousand of the hells we were scared with when we were children. It is a look into man's inferno.

Off come glasses at 4 seconds plus zero. Brilliant color . . . mushroom . . . deep purple . . . a letdown after what went before . . . our knees wobble.

What would happen if you and I were in the midst of that . . . is it too late to prepare . . . what can we do quickly, quickly, quickly?

Normalcy comes to you and me—but not quite. We will never be the same. This blast was planned by our friends—the next one may not be.

Tom Campbell

Editor

Half-soles for a Behemoth . .

SHARON* HI-STRENGTH STEELS DELIVER MAXIMUM STRENGTH FOR TANK TRACKS

Tank parts must absorb a lot of punishment. Rough terrain, twisting directional turns, cannon recoil, quick starts and stops are a few of the reasons why modern tanks must take it.

To overcome failure through metal fatigue designers today are specifying that most parts of this vital mechanism be constructed of hi-strength steels. As a leader in the production of such special alloys Sharon has had a large part in the production of hi-strength steels for military purposes.

These same Sharon hi-strength steels are becoming increasingly available for product improvement for civilian consumption. If you're in the market for tough steels that will do more, talk to the Sharon man in your area.

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For information on Titanium contact Mallory-Sharon Titanium Corp., Niles, Ohio

SHARONSTEEL

Dear Editor:

Letters from readers

Widespread Circulation

Sir:

In the Feb. 26 issue of THE IRON AGE your editorial "How To Start A Depression" was read with a great deal of interest.

We think the idea has so much merit that we are asking permission to reprint the editorial in our Employees Newsletter, which is issued monthly with a circulation of 700.

R. A. BEYER
Management Representative

Moltrup Steel Products Co.
Beaver, Falls, Pa.

Sir:

May we have permission to reprint the editorial "How To Start A Depression" in our Tubular Heater Topics? This newsletter is sent to about 500 engineers, purchasing agents and superintendents in the electric appliance or equipment industry.

W. J. McMAHON

The Still-Man Co.
New York

Measures Paint Thickness

Sir:

On p. 139 of your Mar. 12 issue there is an article titled "Hand Gage Accurately Measures Paint Coat Thickness".

It is stated that there are several instruments of this kind on the market and we would be interested to know the manufacturers' names.

A. I. VINES
Chief Mechanical Engineer

Arcrods Corp.
Sparrows Point, Md.

The manufacturer of the hand gage described in our article is the Henry A. Gardner Laboratories, 4723 Elm St., Bethesda, Md.—Ed.

Silicon Carbide Deoxidation

Sir:

Your Jan. 22 issue carries on p. 105 a short article entitled "Silicon Carbide Deoxidation Practice Grows".

The article discusses briefly the use of silicon carbide grain as a metallurgical addition agent in the metallurgy of steel, and states in the second paragraph that "the current use is not new or novel" and further states that a series of United States patents issued in the 19th Century cover "the same practices of today".

The above statements are misleading in that one would be led to believe that there are no active patents covering the current practice of using granular silicon carbide as a metallurgical addition agent in the manufacture of steel. On the contrary, Brown et al. U. S. Patent 2,444,424 assigned to The Carborundum Co. does not expire until July 6, 1965; that patent covers a process of using granular silicon carbide as a ladle addition to molten steel.

K. W. BROWNELL
Patent Attorney

Carborundum Co.
Niagara Falls, N. Y.

Pressure Welding

Sir:

Your Oct. 16 issue carried a Newsfront item stating: "Aluminum window sections will be pressure welded with a new machine now being designed. Pressures of about 20,000 psi will be used and welding requires no heat."

Upon inquiring about this item, your reply of Nov. 11 indicated further information could not be released at that time.

We shall greatly appreciate hearing from you as to whether or not anything further regarding this item was published in a later issue.

H. MEYER
Director of Purchases

General Bronze Corp.
Garden City, N. Y.

Further information can now be obtained from W. A. Barnes, Utica Drop Forge & Tool Co., 2500 Whitesboro St., Utica, N. Y.

Metal Finishing Ideas

Sir:

In the Feb. 26 issue I read an article entitled "Can You Use These New Metal Finishing Ideas?" I found something that I would like to know more about.

Would you tell me where I might obtain additional information on chemical polishing of aluminum.

D. M. DeWOLF
Manager

Royal Oak Products Co.
Royal Oak, Mich.

We suggest you write to the Commissioner of Patents in Washington, D. C., for copies of the following patents: No. 2,593,447-9; No. 2,614,914; No. 2,613,141; No. 2,614,913; and Patent Application No. 64,438.—Ed.

430 Stainless

Sir:

May we have two copies of the complete article "How and Where to Use 430 Stainless" which began in your Feb. 26 issue.

A. McCLURE

Atlas Steels Ltd.
Welland, Ont.

"We're former Sheet Coil users. After testing Thinsteel, the precision cold rolled strip steel, it was evident that many dollars could be saved. First, we get more finished parts per ton because of Thinsteel's exceptionally close tolerance — providing maximum feet per pound. Next, we are getting much longer die life—that means less 'downtime,' too—because Thinsteel's uniformity of physicals and accuracy to all specifications smoothed our fabricating problem. And the finish keeps us out of 'hot water' in our plating department — gives us the best looking job in our business and that means more profitable business for us. Maybe you had better switch to Thinsteel."

"We switched to Sheet Coil and are making more money. I know it's wide sheet 'production run' material slit to size, but it's just right for our needs. We don't use expensive, intricate dies—our simple blanking operation can take thickness variations in stride, there's no need for close tolerance material. Since our finished product is painted we find the surface finish of Sheet Coil completely satisfactory for this operation—in fact, the surface not being as smooth is good for our painting requirement. So you see, we are getting a best buy for our need with Sheet Coil."

No need for argument as to which strip is better for your job. Kenilworth stocks both—and is ready to help you determine your best buy. Make Kenilworth's big inventory your warehouse—you can depend on Kenilworth's service when you need it.

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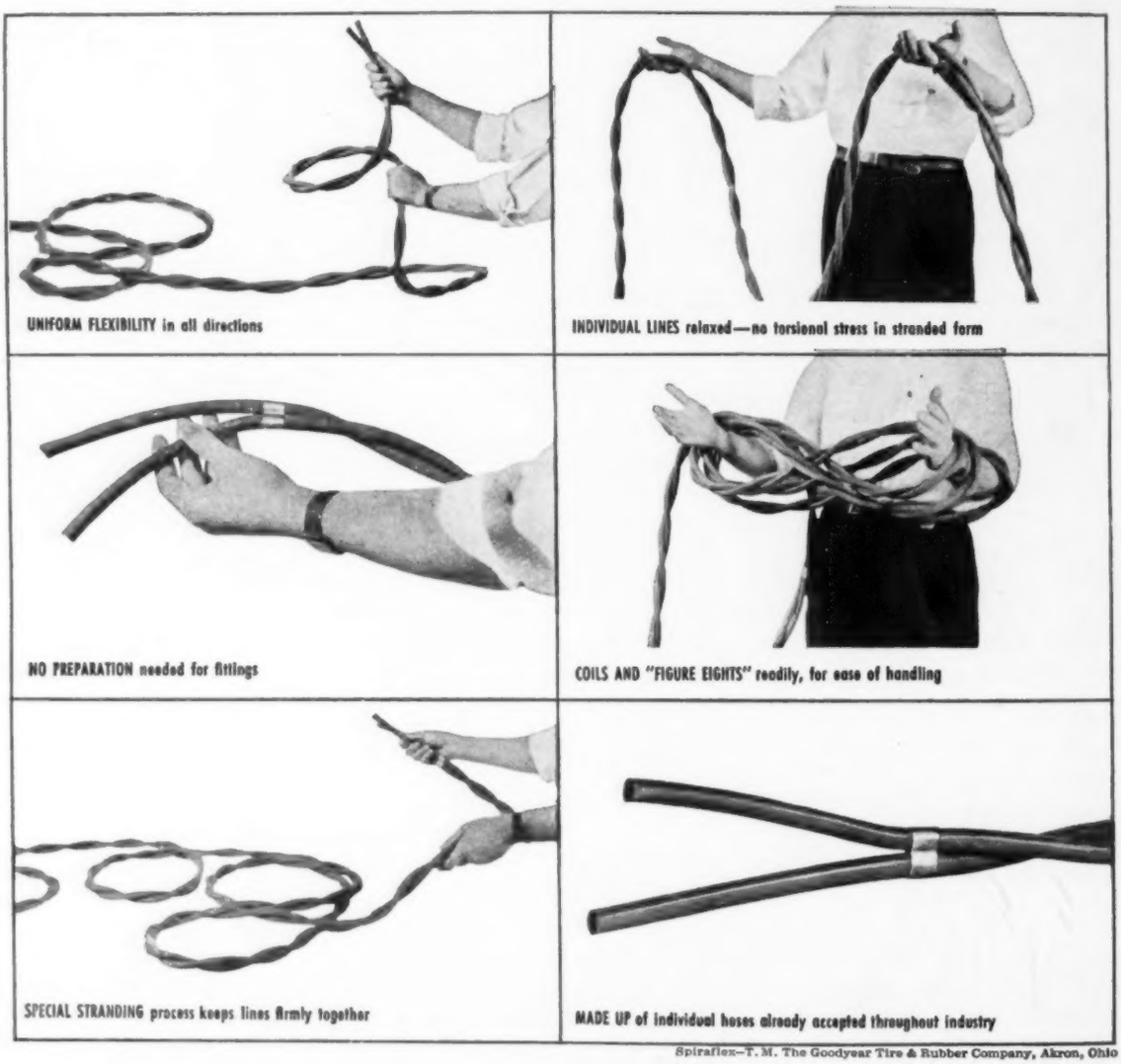
Spiraflex hose is *uniformly* flexible in all directions —making for ease of handling. It needs no special preparation for fittings—is lighter than other hose with same welding pressure, because Spiraflex is reinforced with rayon for high strength and light weight.

Ask your distributor about Spiraflex Welding Hose — in stock in 3/16", 1/4" and 5/16" sizes, and available in other sizes and combinations. Or write Goodyear, Mechanical Goods Div., Akron 16, Ohio.



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SPECIAL STRANDING process keeps lines firmly together

MADE UP of individual hoses already accepted throughout industry

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GOODYEAR

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Fatigue Cracks

by William M. Coffey

New York City

We've never seen the St. Patrick's Day Parades they pull off here in New York. We've come close, though. One year we reached as far as Madison Ave., one block from the festivities and as far as we can judge that's as close as most people get who aren't active members of the Ancient Order of Hibernians. But we always have a lot of fun milling about in the throng.

And we've found out why these boys of the old sod are so full of fun—and blarney. Rain, snow, sleet, hail or flood you can needle up to a Shamrock fellow and say, "T'is a beautiful day." "Aye, t'is," is always the answer. Rain, snow, sleet, hail or flood. To everyone else it's raining, snowing, sleeting, hailing or flooding, but they aren't Irish. *O'Coffey.*

Flight Notes

With everyone now getting their power lawn-mowers in commission to do a job on the old sod, perhaps we can forget the ravages of "winter weakness" and get a chuckle out of this perm which recently appeared in the Pan American Airlines "Clipper":

A bunch of the germs were whooping it up
In one of the bronchial saloons,
Two bugs on the end of the larynx
Were jazzing a ragtime tune—
While back of the teeth in a solo game
Sat dangerous Dan Kerchoo,
And watching the pulse sat the light of his love
The lady known as Flu.

* * *

Officials at the Carboloy Dept. of General Electric Co. in Detroit are wondering: should police permits be obtained by purchasers of its new Live-Spiral masonry drill?

Cause of the head scratching was a letter received recently from a West Coast man stating that there had been several burglaries in his area where floor safes were removed by drilling a series of holes in the concrete around the safe's base. From the smoothness of the holes, according to the writer, a Carboloy drill was probably used. *It pays to advertise in* THE IRON AGE!

Keep 'Em Rolling

Original patterns for the pistons that made Maxwell automobiles go (circa 1914) have been sent to Comedian Jack Benny with the sentimental good wishes of the Ohio Piston Co. of Cleveland.

"In spite of many good radio and television plugs you have made for the Maxwell car," wrote Vice-President Milton R. Vipond of Ohio Piston in a letter to Benny, "this item has not been a profitable number in recent years.

"After many conferences with our president, K. McKinley Smith of Ridgefield, Conn., we have reluctantly decided to discontinue listing this part rather than wait 10 more years for another order. Sentiment forbade us to irreverently scrap the pattern equipment, but lack of storage space requires that we dispose of it. We are, therefore, donating this equipment to you."

Vipond recalled that by Benny's public admissions of his age, "this company and you started at the same time—39 years ago."

"Our only wish, Mr. Benny," Vipond concluded, "is to safeguard and perpetuate the economical use of your car, because we know they would never allow you its real value as a trade-in today. Keep it going with Ohio Pistons."

A Joke?

A girl asked an old bachelor whether he had been disappointed in love.

"No, I never was exactly disappointed in love," he replied. "I was more what you might call discouraged. You see, when I was very young I became very much enamored of a young lady of my acquaintance; I was mortally afraid to tell her of my feeling, but at last I screwed up my courage to the proposing point. I said, 'Let's get married.'
"And she said, 'Good Lord! Who'd have us!"

Puzzlers

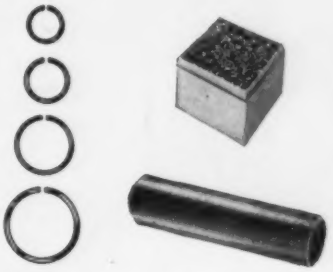
The speed of the current that the fisherman was bucking was 1½ miles per hour. The winners: Mr. E. L. Mason (we call him Mister because he says he enjoys this page), Bill Farley, Martin K. Base, Jr., Harold Johnson and Charles H. Jennings—so far.

New Puzzle

How much water at 212 F. can be converted into steam at 212 F. by a quantity of heat weighing one (1) gram? Submitted by R. L. Sites of New York City. Thanks.

ORDNANCE CONTRACTORS! READ THIS!

If your shell, rocket or Burster job specifies brazing with Silver Alloy Rings, it will pay you to contact the one manufacturer who *completes* the job — and at minimum costs.



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the Iron Age
FOUNDED 1855

THE IRON AGE Newsfront

A BOOMING FUTURE STEEL MARKET looms in the Western States, Western Canada and Mexico. Ten years will see steady growing demand there for pipe, plate, structurals. The whole western part of North America may become one large trade area as result of oil and gas discoveries in Canada and industrialization of Mexico.

THE RECENT ATOM BLAST CAUSED MORE DAMAGE to houses 7500 ft from Ground Zero than expected. Tower shot produced much radioactivity which hindered inspection. In real attack this radiation would have had serious casualties beyond 1½ miles even though blast was heralded as a "small one."

STRUCTURAL DESIGN CHANGES IN AUTOMOBILE TOPS may come as a result of the atom blast. Cars 1½ to 2 miles from Ground Zero with windows closed had "dished" tops. Auto's proved their worth as shelters as far as pressure was concerned, but debris and radioactivity in real attack would qualify conclusions.

SPRAYED ON FUSED COATINGS OF WEARPROOF ALLOYS are resulting in large reductions of maintenance costs on tools, dies, and machine tool wear parts. Ease of renewing coating frequently eliminates cost of new tools or parts.

INCREASED PRODUCTION PER MAN-HOUR and fewer rejects have resulted from use of a grouping mechanism with an electro-spray paint system. One appliance manufacturer reports a 175 pct gain in cabinets painted per gallon, plus reduced cost of air makeup.

PLASTIC-COATED STEEL PIPE may be the answer to plastic pipe competition, some steel producers believe. Chief problem is high cost of applying the plastic coating. Once this is licked, coated steel pipe would outperform all-plastic pipe on strength and heat-resistant properties, and have same corrosion resistance.

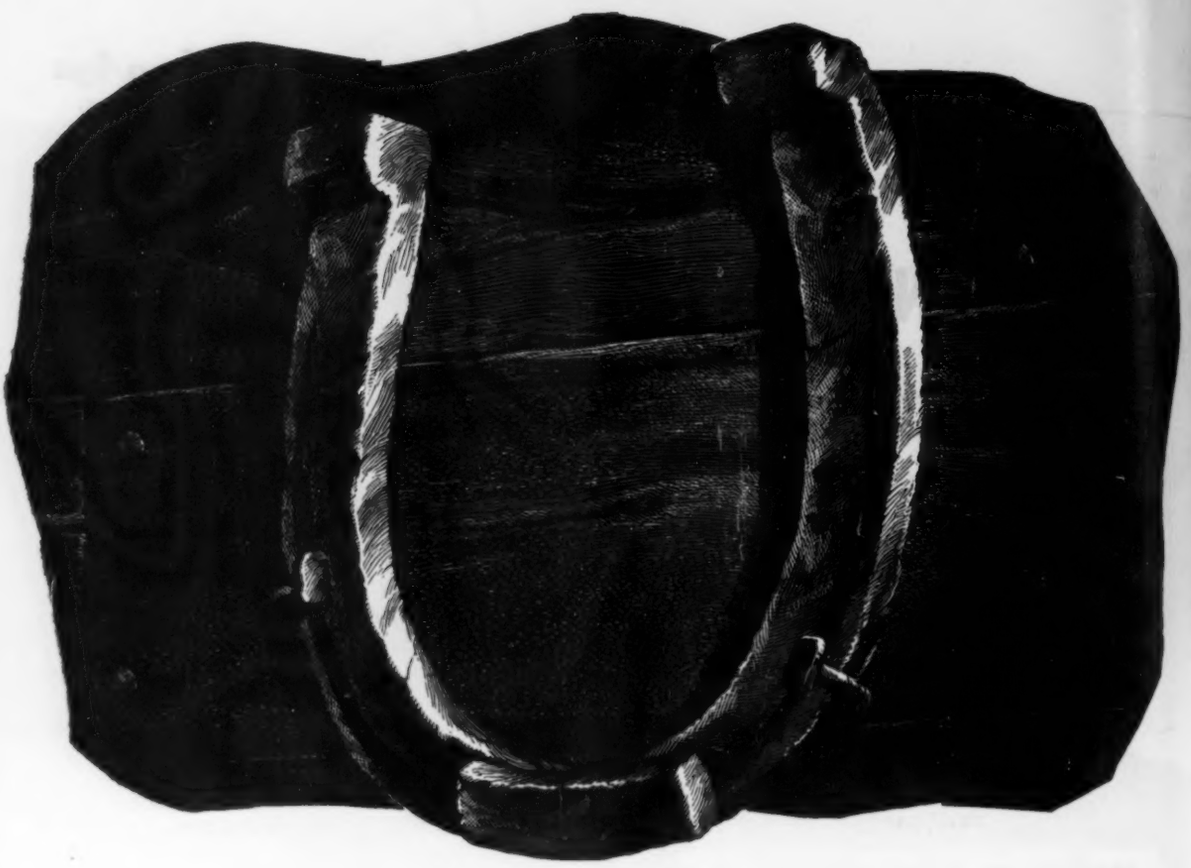
HIGH CORROSION RESISTANCE of a new Stellite alloy, first used as a lining material in a sulfite digester, may prove helpful in other high-temperature installations where corrosion is a problem.

A RUGGED, 1500-LB VEHICLE called the Mighty Mite is the latest pride of the Marine Corps. The versatile Mite has no axles, each wheel being driven independently. Marines say the vehicle would be a suitable mobile platform for the 105-mm recoilless rifle.

HIGH MANGANESE STAINLESS STEEL is being studied for use in high-pressure high-temperature sterilizers by the Armed Forces Medical Procurement agency. Type 302 was originally used.

REINFORCED PLASTIC TANKS FOR USE IN THE OIL INDUSTRY will soon be on the market in a larger size. Heretofore available in 500 bbl capacity or less, a new model will offer a 750 bbl storage capacity.

MASTIC COATINGS FOR PERMANENT CORROSION PROTECTION around pickling tanks in blast furnace and coke oven areas are being used more and more by large steel companies.



Does a Horseshoe Bring Luck?

Grandpa set a lot of store by the horseshoe over his barn door. Often the only formal opening ceremony for businesses of Grandpa's day, was the ritual of nailing a horseshoe over the entrance. But businessmen today know that "luck" is a combination of careful planning and hard work.

Of course, some mustache-cup thinking, like the horseshoe idea, has carried over into our time. The idea that certain metal items must always be cast, or always cut from solid, has persisted largely because of tradition. Many products, now handicapped sales-wise by their appearance and weight, can be made handsomer and less expensively on modern stamping presses.

Clearing Machine Corporation has kept in step with the times in showing manufacturers the way to improved methods of press production. If you manufacture volume quantities of identical items, Clearing engineers may be able to help you boost production and cut costs. This service is yours at no expense. Why not get in touch with us today?

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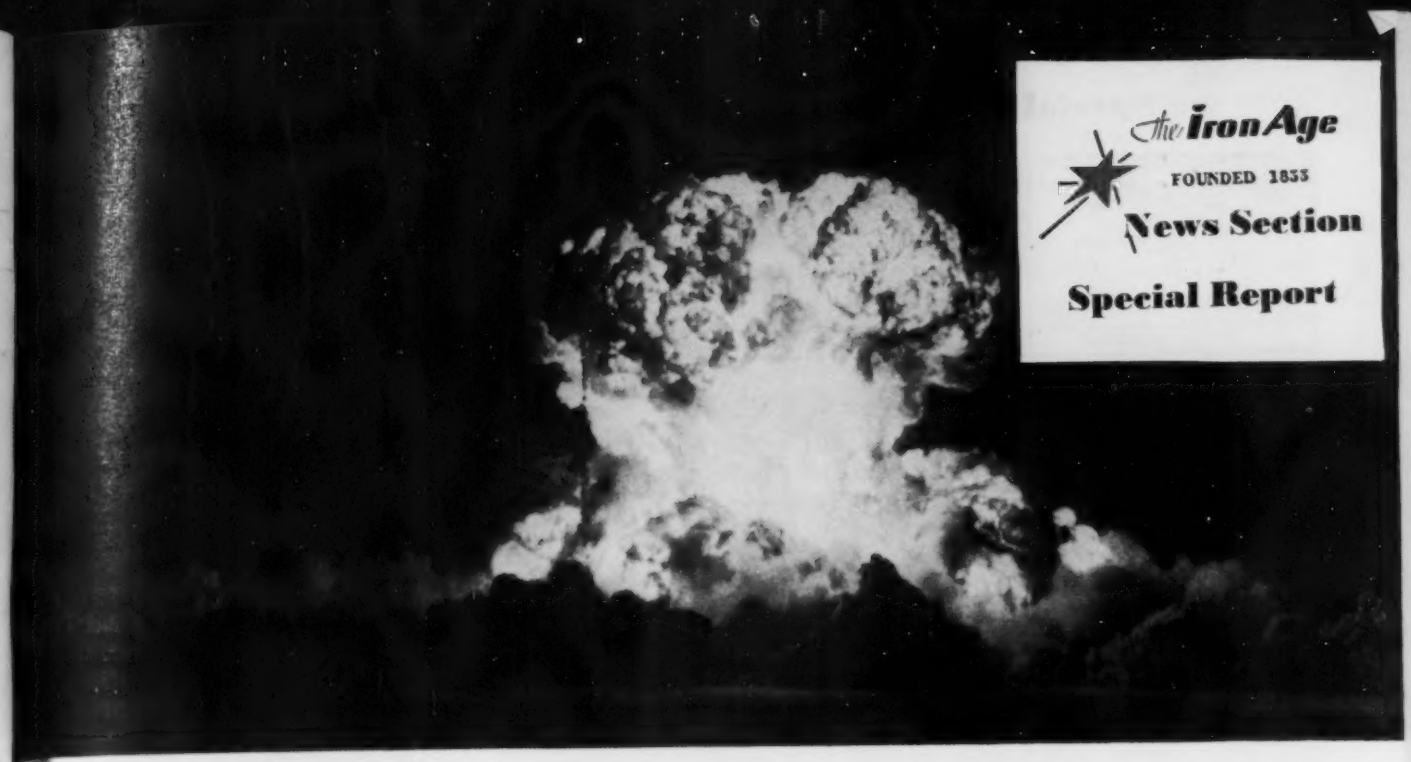


the Iron Age
FOUNDED 1855
News Section
Special Report

A-BOMB: Test Blast Echoes into Industry

Eyewitness account of explosion . . . Results to be declassified for industry, civil defense . . . What happened to cars, homes, and dummies . . . Cues for industry—*By Tom Campbell.*

Effects of the "Atomic Device" explosion near Las Vegas last week hold sober thoughts for plant managers, contractors and executives generally. Damage to one sample house furnished with dummies, furniture, bomb shelters and every-day items was greater than government officials had expected.

This public blast (there will be others under wraps) served its purpose—to test structural items and to impress civilians, defense people, and the public with the danger of attack and power of even "small" bomb blasts.

An average 2-story frame dwelling, located 3500 ft from Point Zero was completely demolished. The blast at Point Zero took place on top of a 300-ft tower.

House No. 2 which sustained enough damage to cause it to be unsafe after the blast was 7500 ft from the nuclear explosion. Some Federal Civilian Defense Administration people had expected little or no damage to House No. 2. So the experiment was a success as far as providing data on structures close to atomic blasts.

(See schematic drawing on next page for locations of objects in path of A-bomb blast.)

Strong radioactivity from the blast delayed preliminary observation of House No. 2.

Newsmen did not visit the house on Tuesday or Wednesday last, because of harmful radioactivity and its structurally unsafe condition.

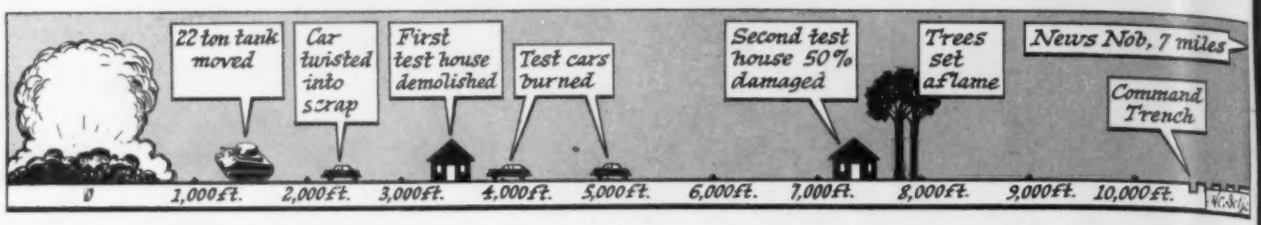
JUST BACK from front lines to witness A-blast, Major Tom Eichler (right) has a double story to talk over with Iron Age Editor Tom Campbell. Photo was taken at News Nob, 7 miles from ground zero, or point of "atomic device" blast.

According to Robert Corsbie, liaison officer for Civilian Defense, damage to the 2-story (frame cinder block foundation) House No. 2 included:

Ninety-five pct of glass and window sashes blown into house; 75 pct of floor joists broken at midpoint (2-in. x 8-in. joists); fireplace joists pulled away; similar damage under dining room and kitchen floor.

Ten pct of plaster fell; cracks from movement of house on foundation; floors littered with broken glass, broken furniture, twisted venetian (steel) blinds; doors and door hardware blown off on second floor of house; roof (shingle) dished, with some rafters broken.

Basement in fairly good shape with only one-fourth the radioactivity found on first and second floor; lean-to shelter okay and unblocked; steel columns supporting center hall and stair well not damaged; basement door blown off, structural girder undamaged, stairs okay but stair rail down. From ques-



International News Service

tion and answer periods the following conclusions could reasonably be drawn:

Had dummies been people there would have been serious casualties on first and second floors; pressure, flying glass and furniture and radioactivity would have done their dirty work.

Damage Detailed

Blast effect of 15,000 tons of TNT caused this average home 1½ miles from the explosion to become uninhabitable except in basement and to become totally unsafe to any but rescuers with special training.

Had there been public utilities and plumbing, more serious damage would have been discernible with probability of fire from short circuits. No effect was noticed on silk, cotton and wool clothes on dummies, but dummies on first and second floor were tossed about.

All data on effect of the atomic explosion on structural design and material will be studied and declassified later for the benefit of engineers, builders, contractors, and manufacturers. Above conclusions were drawn by the writer as the result of excellent cooperation from Mr. Corsbie.

Fifty-nine cars including two mail trucks, furnished through cooperation of dealers and manufacturers, were planted at varying distances from Point Zero. Radioactivity Tuesday prevented close inspection of cars close to blast center (0 to ½ mile from Point Zero). Here is a preliminary rundown which will be checked with data of the Society of Automotive Engineers and at a later date with official information.

Not as much fire damage as expected; some fires on cars from Point Zero to ½ mile; cars turned over and knocked about to ¾ miles from Ground Zero.

Cars located between 1½ miles and 2 miles from blast with windows closed suffered dished tops (enough in one case to dent head of dummy); no damage to instruments, upholstery; no flat tires; no failure of cars to start after proper starting procedure. Cars in this area with windows open showed no dished tops.

Autos Give Protection

Based on question and answer period the following preliminary conclusions could be drawn:

Autos not too close to Ground Zero are safe if windows are left slightly open to equalize pressure and if person lies on floor. Radioactivity would be a hazard but bodily injury would be much less likely compared with being outside of cars.

Cars 1½ miles and farther from Ground Zero in a small blast suffer practically no damage at all. All dummies were in same place as before blast.

Lessons May Help

Cars closer than ¾ miles would be tossed about, face fire damage and possible disintegration. Cars broadside to blast and close to Ground Zero seemed damaged most. Mail truck ¾ miles from blast center was over on its side; Mail truck 1½ miles from blast okay.

Power for raising and lowering windows could be given study because action in event of attack would have to be taken quickly.

Auto people seem to have good grounds for believing cars make good shelters. But in a crowded spot with debris flying that opinion would have to be modified.

No matter what comfort or pain comes from analyzing the latest blast it must be remembered that attacks with bombs 2½ times the intensity of last week's "Device" can be expected. Trained Civil Defense people are necessary to get out survivors but radioactivity appeared to be a hazard to civilians close to blast.

Military tanks close to Ground Zero appeared to this writer to be unaffected

This experiment took place on a desert without concentration of city life. It was clear that average dwellings' furniture, glass, wooden structures above cellar doors and walls were—if within 1½ miles from center of the blast—all vulnerable to severe damage plus radiation hazards to survivors.

More extended tests on such structures as cement plant-type buildings, brick houses, and utility plants

TWO MILES from blast point this auto suffered a dented top. Closed windows permitted external pressure to buckle the steel. Lesson: get to floor and leave window slightly open. The case seems to be good that autos make good shelters although debris flying could modify it.

must await future developments and appropriations.

Lack of interest or information about the danger of atomic attack has given a dangerous complacency to industry and the public. This may be on the way out—and the test may do its share to reduce it.

Many civilian defense people from all areas of the country were profoundly impressed with the atomic explosion. They will spread this feeling to their groups in the home towns.

What Can Industry Do?

But what about industry? What will be done to see that equipment and material can be designed to meet the impact and effect of atomic attack should it ever come?

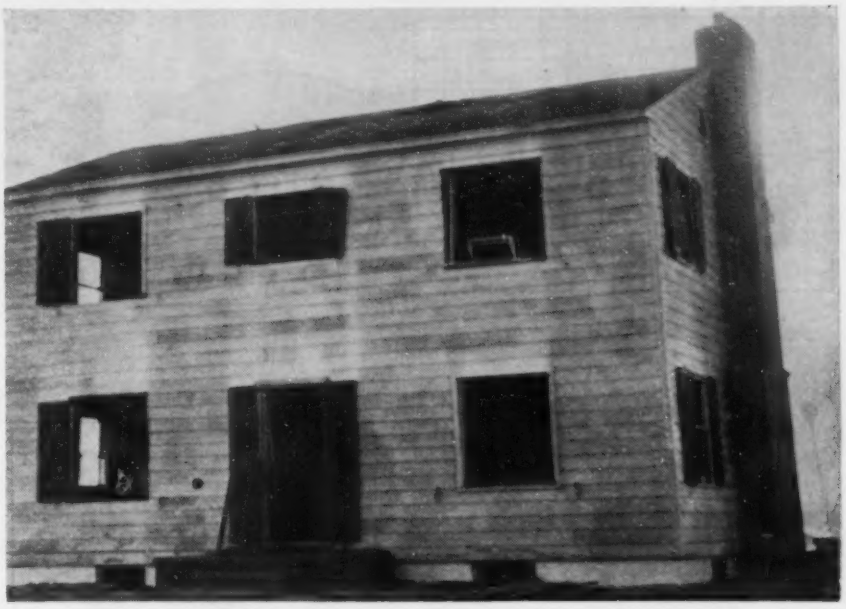
What can and what will industry do about dispersing plants, about underground operation?

These questions may seem silly to some, but such people either do not realize our danger or will not face it. Time to plan for new equipment, decentralization and underground building is now—not when it might be too late. There's no second guessing an atom bomb.

Details Are Available

Federal Civil Defense is trying with its limited funds to find answers to: Effect of atomic blast on structural materials such as cement, steel, and other materials; effect on foods, chemicals, and drugs; behavior of building components. Effects on these materials as the result of a series of atomic shots (not public) will be studied and declassified as rapidly as possible.

Atomic Energy Commission has information on the effect of atomic blasts on some materials. They have made available blast data showing effects per sq in. of blast pressure. From figures available many metal and building engineers and architects can make estimates to aid them in exploring this question. The Washington office of AEC has more information than industry and the public generally suppose. It may be of help.



AT 7500 FT FROM blast point House No. 2 looked like this. Windows were blown out by explosion's force. Trees in back of house started to blaze. This is the side of house facing direction of the explosion. Home dwellers also face hazards of radioactivity.

To witness the blast and to inquire about, see and feel the atomic preparations in the Las Vegas area will convince anyone that now is the time to prepare for defense. To know what to do if attacked is important. But it is far more important to start to think, plan, and act on programs for prevention of damage and loss of life.

Atomic Defense Program for Industry

A good program for the industrialist or his delegated authority could be:

(1) Review all declassified literature on atomic blasts and effects.

(2) Work whole-heartedly with local civilian defense agencies.

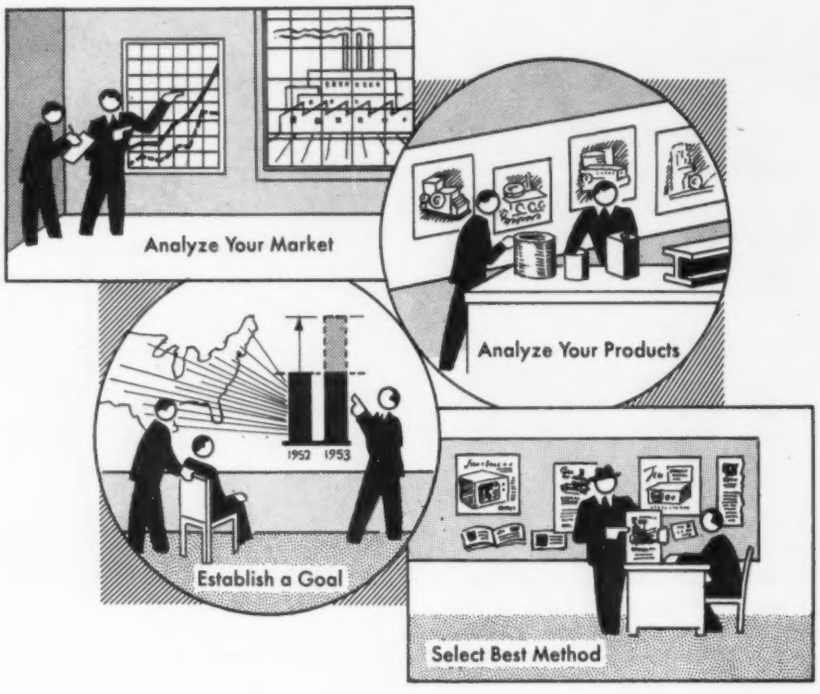
(3) Watch for new information on effects of the Mar. 17 and other blasts on buildings, equipment, machinery, cement, drugs. food, automobiles and houses. It will be available in several months.

(4) Don't underestimate the power of the Communists or assume they are far behind us.

(5) Make up your mind that you hope we will not be attacked but if we are you will be ready.

(6) Search for all material on dispersion of plants. Study seriously the question of underground plants for storage and operations.

If these factors are seriously studied and become a specific job to be done, progress will be made. Danger of attack will be with us for a long time. Until the threat has been removed it is doubtful that full peacetime uses of atomic energy in industry can be realized.



SALES: Market Development Saves Time

Industrial selling costs too high for salesmen to spend time on contact work . . . Market development pre-sells, promotes good will . . . How to establish a program explained.

If you're not backing up your salesmen with an adequate market development program, you are probably wasting much of their selling time, says Robert M. Nelson, supervisor of distributor programs, Armco Steel Corp.

In a recent address before the New York Chapter of American Steel Warehouse Assn., Mr. Nelson pointed out that there are five basic steps the salesman goes through in making a sale:

1. Contact everyone influencing purchasing.
2. Arouse interest in your products and service.
3. Create preference for your firm and products.
4. Make a proposal.
5. Close the sale.

And the first three steps are a waste of the salesman's time. Surveys show that the average industrial salesman spends less than 2 hr per day with the people who can actually give him an order.

With the average cost per call between $12 and $20, you can't afford to have your salesmen spending much time on cold turkey calls, contact work and sales development. Market development programs free sales forces to concentrate on making proposals and closing sales.

First step, Mr. Nelson pointed out, is to appoint a responsible and experienced man to run the program. Clerks, trainees, secretaries can't do it. A man of management caliber and experience is a must.

Don't leave it up to an advertising agency to do the job, Mr. Nelson warned. Advertising is an important part of market development, but only one part. Very probably your program head will work very closely with an agency, but the job must be centralized in his hands to be effective.

Next step is to develop a long-term program and an immediate budget for a specific period. Mr. Nelson admitted that this seems obvious but said he had found many distributors with excellent facilities and staffs, but no program or budget for either advertising or market development.

Mr. Nelson stressed that he didn't mean a program based on gimcracks, Christmas gifts or Marilyn Monroe calendars. "I have no doubt that Marilyn Monroe calendars will attract favorable attention, but do they attract attention to the products you are selling?"

Analyze Your Market

The program instead should be based on an analysis of your market and of the products you have to sell, an established goal, and selection of the best method to do the job. It should properly encompass such related factors as development of marketing information, sales promotion and advertising, sales ammunition, and publicity.

Important to any market development program is a good mailing list. Such a mailing list will naturally result from a market survey of your territory.

Mr. Nelson urged that salesmen be required to fill out basic reports on each customer and prospect in their territories. These reports should include complete name and address, type of business, manufacturing performed, materials bought and quantities normally used.

Who Really Decides?

In addition, it is essential, Mr. Nelson said, that these reports give the names and titles of all persons influencing purchasing. One of the main purposes of market development, he pointed out, is to reach personnel not in purchasing who nonetheless influence buying in their plants. Your salesmen can't possibly reach all these people personally. But direct mail and properly placed advertising and publicity can.

These other men are in various departments. Market development should plan material which will be of use to them in their departments, while carrying your company's message.

AUTOS: How "Dream" Models Help

Some have paved way for engineering and design changes . . . Get high publicity rating . . . Not all companies use same approach . . . Trend towards more—By *R. D. Raddant.*

At every auto show or automotive display of any kind, there are sure to be the latest experimental cars. They are generally identified by European names or by letters and numbers, with "X" usually appearing at least once.

They are crowd pleasers. Those who care about styling can gasp at their sleek, futuristic lines. Those who are mechanically minded can study their super-charged power plants and other engineering features. Those who are wild about gadgets can press buttons to their heart's content.

But the question remains. Do they serve some practical purpose, or are they just for show to attract the curious?

It is no secret that strong opposition was registered in one of the Big Three against so much emphasis this year on so-called "dream models." This opposition, emanating chiefly from the financial side of the organization, felt that the cars of the future detracted too much from the regular lines, the bread and butter of the industry.

The Public's Attitude

Nevertheless, almost every car manufacturer has at least one experimental car. Obviously, some are mainly for show. But they do have several other functions.

Excellent use has been made of experimental cars in probing the public's attitude to new styling changes. It has resulted this year in the introduction of several plush sports convertibles and paved the way to production later this year of two and possibly three plastic sports cars. These ventures would never have been undertaken unless there was strong evidence that a market exists for this type car.

When any of these flashy so-called sports cars appeared with even a hint of production plans, their sales forces were snowed under with inquiries, firm orders, and deposits.

The car's initial value, then, is as a market barometer. It also serves to stimulate public interest in new cars, although to what extent is a debatable issue. Publicity advantages are obvious.

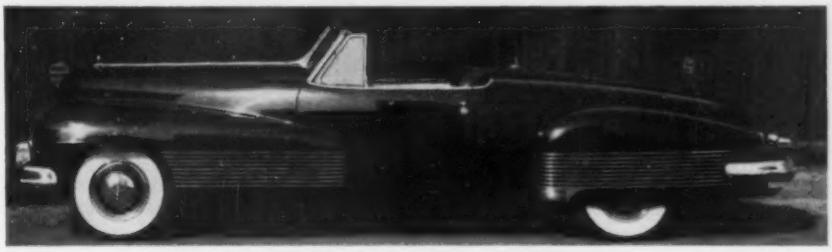
The controversial point is whether they are of value in engineering.

Turning back the calendar to 1938, General Motors brought out what was unpoetically called the "Y Job." (This name today wouldn't be passed by even a $10,000 a year public relations man.) The "Y Job" was called an experimental laboratory on wheels, but a lot of its gadgets and features were scoffed at as entirely unpractical and its lines were said to be too extreme.

Yet its styling was the forerunner of later GM body lines and such gadgets as electrically operated convertible tops and windows became common in later cars.

In 1951 GM again came out with an experimental car—two of them, in fact. They were the famous LeSabre and the Buick XP 300. They had every gadget in the world.

These cars also were experiments in use of light metals. LeSabre's body deck lid, cowl, fender valance, lock pillars and inner door panels were cast magnesium. Its hood,



GRANDDADDY of the experimental car trend was the famous General Motors "Y Job" shown above. Built in 1938 as the first "laboratory on wheels," it served a useful purpose in that many of its features later showed up in stock models. Some of its descendants include GM's own Le Sabre, above right; Chrysler's K310 seen at left; and Ford's XL-500, at the right. All include features which will be included on future models, after public acceptance and production details are studied.

Specialists on jobs that are tough to handle

If your fabricating job is at all complex you'll be interested in knowing that Ingalls facilities for fabricating and erecting steel . . . whether structural or plate .... are capable of solving your most difficult problems. Five well equipped strategically located fabricating plants can give your toughest jobs the kind of workmanship you want in the shortest time and at the lowest cost. Ask Ingalls to quote on your fabricating requirements.

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fenders and outer door panels were sheet aluminum. Most of these uses are now considered impractical.

Meanwhile, LeSabre has been changed mechanically and stylewise, fulfilling the promise to keep it a flexible project.

In contrast to the GM theory, Chrysler's special cars are all constructed and designed within the rigid framework of current production requirements. Each is a practical car that could be built in volume on Detroit production lines.

Demand Practical Approach

One spokesman explains it is not the intention to develop styling experiments that can not be volume produced, or which require materials that cannot be obtained in quantities or at reasonable cost, or that burn fuels which cannot be bought at the corner filling station.

So we find the Chrysler K-310's engine develops 310 hp on premium grade gasoline without supercharging. Only six changes were needed to convert the standard 180 hp FirePower V-8 engine to the K-310 engine. These were all aimed at increasing volumetric efficiency.

Chrysler's experimental cars are the K-310, the C-200, and several "Specials" all built by Ghia.

Ford's 1950 X, "Car of Tomorrow" was brought out a year ago and was billed as a pilot model studied toward future development as a practical four door sedan.

Trend Towards More

A later product of the Lincoln-Mercury Div., the XL-500 was shown only recently, a plastic car with a bubble type top.

Plymouth also brought out an experimental six passenger sedan last week, a forerunner in Plymouth styling. Unlike the usual experimental car, it is aimed at a practical styling of a family-type car. It shows the influence, however, of the styling of the previous Chrysler experimental cars.

All the General Motors glamour cars, the Skylark, El Dorado, etc., as well as the plastic Corvette are indirect results of experimental cars. Nash's ventures into the sports car have been prompted by its own experimental jobs.

PIPE: National Tube Tries Plastic

Installs Aetna-Standard machine to develop production and cost data . . . Survey shows fast plastics growth . . . Steel firms admit market inroads . . . Favor plastic coat—*By J. B. Delaney.*

It's perfectly safe to mention plastic pipe to a steel pipe producer. Furthermore, he'll admit that this newcomer to the pipe industry has taken some business.

Certainly, plastic pipe has made inroads into markets formerly monopolized by steel. In some applications, it has virtually shunted steel pipe to the sidelines. Coal mine drainage is a good example. A study shows plastic pipe is costing steel producers annual sales of 17,000 tons in this field.

Aided by Steel Shortage

Apart from the advantages of the product itself, the growth of the plastic pipe industry has been aided by shortages of steel pipe in the war and post-war periods. Pipe users have tried the plastic product when steel pipe was unavailable, and in many cases found it as good or better.

Steel companies are aware of this. They have kept close tab on this growing industry and know perhaps as much about its potential as do plastic producers themselves. National Tube Div. of U. S. Steel Corp. has just completed a market survey of the field.

National Tube Experiment

National Tube also has installed a plastic pipe extruding machine at its McKeesport, Pa., plant, strictly on an experimental basis. From this Aetna-Standard machine it will develop production and cost data which will help it decide whether to meet competition by going into plastics.

While they are not going to miss any bets, the steel producers give the impression they have no particular desire to get into the business of making plastic pipe. If they do, it will be because they are forced into it.

An alternative that some producers favor is that of developing a plastic-coated steel pipe that would be competitive. To date, work on this project has not been intensive. A test installation in a Canadian boiler house has been encouraging. But the work is still experimental.

Chief problem of applying a coating to steel pipe is that of cost—more than twice that of the pipe itself. Another worry is that of developing a joint that will provide continuous protection.

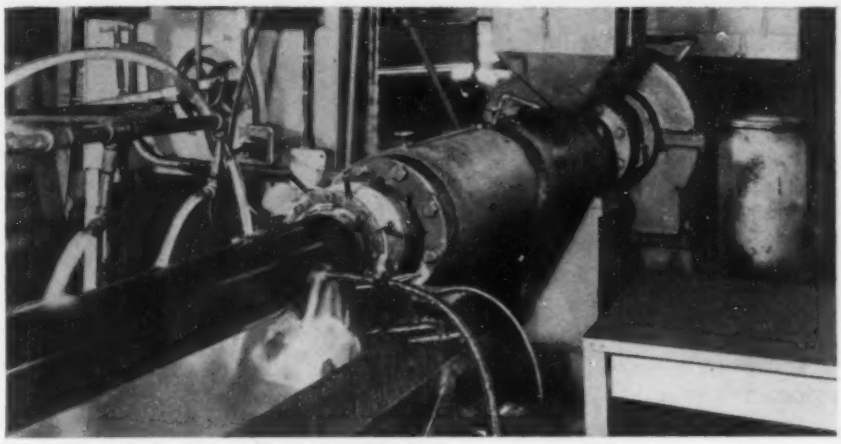
Once the cost factor is licked, steel producers would have a product of much greater structural strength than plastic with the same protection against corrosion, and greater resistance to heat. Tests so far, according to steel men, indicate a plastic coating on steel will stand up under higher temperatures than solid plastic.

It probably is too early to tell just how much plastic pipe will hurt steel pipe producers. The industry is still in its infancy and no one knows its service limitations for the simple reason that installations are only a few years old. There are relatively few standards as yet. Steel pipe producers have been through all this.

Another factor is this: some users of plastic pipe will return to steel pipe when it becomes plentiful. Steel producers will watch this trend closely.

Steel companies are as aware of plastic's weaknesses as its strong points. These include a very narrow range of physical properties (low operating pressures, low heat resistance), lack of a good joint, susceptibility to damage by sunlight, brittleness of glass-reinforced pipe.

Initial cost of plastic pipe is higher than galvanized pipe, for example, but ease of installation more than overcomes this, according to the plastic pipe producers.



PLASTIC PIPE MILL built by Aetna Standard in use at Carlon Products Corp.

Principal applications of plastic pipe have been in coal mines for drainage purposes, water well installations, in the oil fields, electroplating plants, chemicals, food processing, cold water systems, municipal sewage disposal.

Plastic pipe producers are optimistic. One of the largest reports that business last year was 50-60 pct better than in 1951. Further improvement is expected for 1953. Estimates are that the industry produced 30-35 million feet of pipe in 1951, and approximately 50 million feet last year.

New producers are springing up all over the lot. It doesn't cost much to get into the business—approximately $100,000, according to one source; probably even less than that. There are between 40 and 50 producers of thermoplastic and thermosetting plastic pipe.

PRODUCTIVITY: Profits for Everyone

Couch-Uthe Co. installs production value sharing plan . . . Higher efficiency profits both management, labor . . . Firm is screwmaking industry guinea pig on plan—*By R. M. Lorz.*

Workers at Couch-Uthe Co., Elyria, Ohio, are working "smarter" these days because they know they are sharing in the actual dollar value of the things they produce for the company.

This screw machine products firm made local history recently by becoming the first concern in the state to include the Rucker Share of Production Plan as part of its contract with International Assn. of Machinists.

Everybody Likes It

Both company and union heads are enthusiastic about the experiment. They feel it will increase efficiency and worker earnings since men, management and machines will be operating together as a team.

Union heads who might be expected to be suspicious of the innovation are quick to point out that opposition just isn't logical. Most important reason for lack of opposition lies in knowledge that the Rucker plan won't supplant established hourly wages, differentials or overtime.

Instead the plan supplements existing agreements with bonus payments to plant workers for the extra money they create through productivity above an established rate.

What It Is

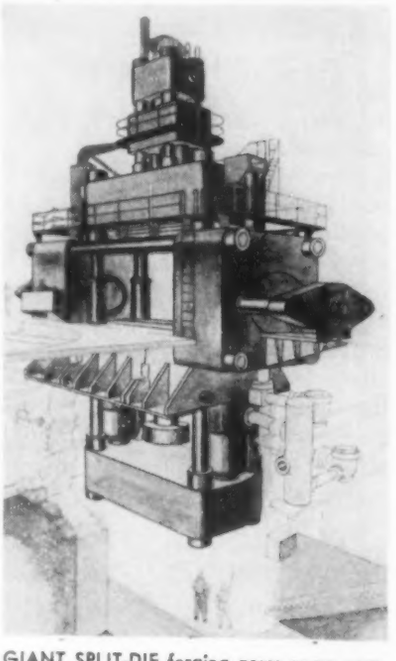
Since the plan is built around production value, a brief definition is in order. Allen W. Rucker, originator of the plan, says production value is simply dollar value added to raw materials through fabrication.

In terms of dollars and cents, production value is determined by subtracting cost of raw material, power, and other fixed charges from the overall sales value of the product.

In order to determine labor's collective share of production value, staff men from Eddy Rucker, Nichols Co., management consulting firm, conducted an exhaustive audit of past records to fix an exact percentage. In the case of Couch-Uthe, auditors found management and labor would get an optimum return from increased efficiency if plant labor were given 44.21 pct of production value.

This figure, which differs from plant to plant, represents a mathematical point dictated by Couch-Uthe's economic tradition and the competitive environment in which it operates. According to company officials, that near-constant ratio hasn't varied more than 1 pct since the firm went into business over 25 years ago.

In operation the plan will be supervised by a committee which will include seven union men and two company officials. This committee is meeting twice a month to determine production value created during specified periods.



GIANT SPLIT-DIE forging press nears completion at Baldwin-Lima-Hamilton Corp. for installation at Cameron Iron Works, Inc., Houston. Capacity will be 11,000 tons, with a maximum vertical opening of 12 ft and maximum horizontal clearance between side-ram faces of 15½ ft.

Production value is computed by subtracting raw material costs and fixed charges from the sales dollar value of all products. After subtracting all hourly wages and overtime, workers' percentage of total production value is computed.

Beat The Odds

If the amount of monthly or yearly wage rates and overtime paid is less than labor's formulated share of production value, the total amount of wages and overtime paid is subtracted from labor's share of the production pie. Remainder is distributed to plant workers in relation to their basic differential wage scale. This bonus is a measurement of how much productivity has risen above average performance recorded before the plan's inception.

Supporters say annual earnings have been increased from 12 to 58 pct because the plan introduces an element of industrial citizenship which finds labor and management making money together instead of out of each other. Difference between the plan and profit sharing is emphasized.

Paradox on Profits

Spokesmen point out that Rucker Plan employees can make better wages even when their firm fails to reach the breakeven point. This paradox is explained by the complete separation of management profits and obligations from the workers' constant share of production value.

In other words if a firm using the plan is barely breaking even on customer accounts workers will still be entitled to their proportionate share of production value in addition to regular wages.

If the plan proves a success at Couch-Uthe the entire screw machine industry may adopt it. The Elyria firm has volunteered test case.

ROADS: Auto Taxes Slow Building

States knock federal auto excise taxes . . . Tell Congress they prevent local levies for needed new roads . . . Ways, Means Committee studies bills . . . Action doubtful—*By R. M. Stroupe.*

Efforts to persuade the Federal Government to drop automotive excise taxes are now being pushed more strongly at state levels than in Washington.

Basic contention of the states is that the national revenue from taxes on motor vehicles, parts, tires, and fuel has placed so heavy a burden on the public that the various legislatures, though seeing the need for added funds to make intrastate road and highway improvements, are reluctant to raise their own levies.

Takes Big Bite

If the federal excises have been correctly described as "emergency" measures, it is pointed out, their existence should have been temporary and ought to be ended.

Tax money brought in by excises in 1952 was sizable enough to give the states concern. Take on gasoline alone added up to more than $851 million, greater than all federal automotive excises in any year prior to 1946. When taxes on diesel fuel for highway use are added, the 1952 total for fuel alone becomes more than $866 million.

Federal excises on other automotive items, including vehicles themselves, reached the following levels last year: automobiles and motorcycles, $601,852,000; trucks, buses and trailers, $187,837,000; parts and accessories, $187,356,000; tires and tubes, $164,510,000; lubricating oil, $92,288,000.

States Want Cuts

As a normal reaction, state legislatures are indicating their wishes that the U. S. Government halt this drain on vehicle users. South Dakota, for example, has asked Congress to repeal excises on vehicle manufacturers and leave this revenue field to the states. The New Hampshire legislature is urging the Federal Government to "retire immediately from motor fuel taxation."

Says the New Hampshire legislature: "Many of the states are in need of additional revenue for the construction and maintenance of their highways, but are experiencing extreme difficulty in their efforts to obtain revenue for highway purposes because of the magnitude of the existing overall tax burden now imposed upon the motor-using public."

Efforts of congressional delegations to effect a trimming or complete scrapping of federal automotive excises have not been confined entirely to presenting state legislature resolutions. A number of individual congressmen have proposed bills which would bring about these actions. Some are:

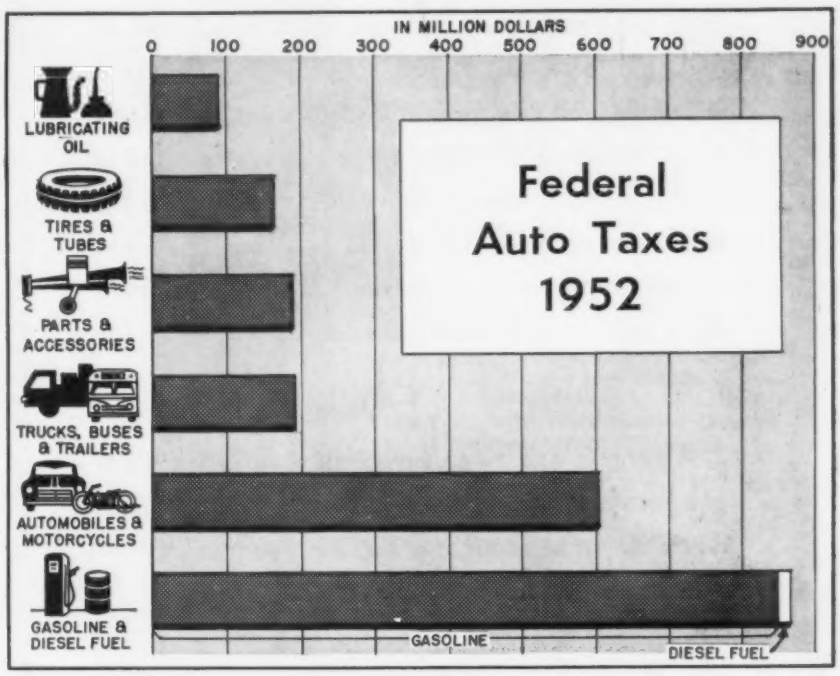
H. R. 5, introduced by Rep. John D. Dingell, D., Mich. This bill would reduce excises on trucks, buses and auto parts from 8 to 2 pct and on passenger cars from 10 to 3 pct.

H. R. 3186, Rep. Charles G. Oakman's bill, recommends elimination of all federal automotive excises. In proposing this measure, the Michigan Republican stated his view that "automotive excises as presently constituted do more harm than good . . . it is probable they dry up more government tax income than they create on their own account."

In appraising the result of these expressions of interest by the lawmakers, it is well to note that the foregoing bills have been assigned to the House Ways and Means Committee. This powerful body eventually might be willing to consider one or all of these measures, but not until it has disposed of the sharp-edged question of a possible cut in income taxes. Latter issue is Project No. 1 with Rep. Daniel A. Reed, R., N. Y., chairman of the committee.

Best indications are that the committee will not, during this session, report a bill calling for reduction of any of the automotive excises.

For this reason, the question of allowing the state to supersede the U. S. in the automotive excise field probably will not be answered until a later session of Congress—if then.



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LEAD, ZINC: Seek

Low prices shut mines . . . Ask 1¢ tariff hike for each 1¢ dip in price . . . Plan may snag.

Western congressmen said last week that legislation will shortly be proposed which is aimed at bringing relief to lead and zinc mining and "stabilizing of the market for metals at prices consistent with prevailing domestic economic levels."

It is hoped that legislation can be passed which will avoid direct subsidies but will guarantee price levels that will "keep mines open and permit some additional development." It would apply industry-wide, not merely to marginal operations.

Since Korea these metals have run hot and cold. Extreme shortage in 1950 and 1951 forced ceilings upward to 19.5¢ for zinc and 19¢ for lead. This move was designed to increase domestic production and stimulate imports. The latter climbed to monthly rates of 27,000 tons for lead and 32,000 tons for zinc.

Increasing output and imports, reduced demand as a result of the steel strike, freeing of the metals for private trade in London, and the release of British government-held stocks caused prices to drop to today's levels of 13.5¢ for lead and 11¢ for zinc.

Shut Down Mines

This was fine for the consumer, but hard on the mining industry—where costs have not decreased. Many mines have closed, some are operating at low profit and still others are hanging on at a loss.

Pressure is pouring in on Western congressmen—not only from the mining industry but from miners who are being laid off, from merchants, and from state governments.

Typical is a resolution passed by the Utah state legislature, endorsed by the Governor, and sent to the Congress, the White House,

Sliding Scale Duty

and each of the four members of the Utah delegation.

It deplores not only extensive foreign procurement, but also the use of public funds to finance foreign development while domestic production is suffering.

Rep. William A. Dawson, R., Utah, was particularly critical of some government contracts which guarantee as much as 17.5¢.

Asked to justify such a 3-year contract, mobilization officials replied that contracts were based upon a study of the "then determined future requirements."

In other words, said Mr. Dawson, "it looked like a good deal at the time."

Ask Sliding Duty

Drafting of the "remedial" legislation is nearing the final stage, THE IRON AGE was told last week.

In substance it would follow the lines of industry recommendations, setting up a variable or sliding scale of import levies.

For example, the import duty would be increased 1¢ per lb for each 1¢ per lb the metal sank below an established base price.

This base price had not been settled last week. One source said 15¢ per lb was being discussed.

This may run into a roadblock in the form of the international tariff agreement signed by the U. S. and 23 other nations in Geneva in 1948. Signers agreed not to erect any new trade barriers and this sliding duty may well be considered a violation of the agreement.

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2: Another new product – the Perkins "Bendit 15" – a patented metal forming machine bends and shapes sheets, rods; strips tubing into innumerable complex as well as simple forms that would be difficult or impossible to make by other means. Eliminates need for expensive tools or specialized skills. Ht. 47", net wt. 200 lbs. Write today for descriptive catalogs, prices etc.

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PRICES: Rise or Fall on Their Own

Controls' end will bring some upward adjustments on products which took a licking under OPS . . . Price trends on ferrous, nonferrous metals . . . Wage talk influence—*By R. L. Hatschek.*

The metals market is now free to seek its own level for the first time since January 1951. With the last gasp of price controls last week on Mar. 17, many metal fabricators are wondering: What happens now?

Not very much. There won't be an upheaval—but there will be some price revisions upward, most of them adjustments to permit fair profits. These are certain to come because profit margins on many price controlled products were thrown out of joint when OPS straight percentage increases did not cover costs that had risen higher than the average.

And some prices will rise now because they would have done so long ago had they not been held down unrealistically by OPS.

Five Win Rises

Of the seven basic metals compared in the table, steel, aluminum, nickel, zinc and lead were granted ceiling increases in the past 2 years.

Since then zinc and lead sank to well below original ceilings and they now show no signs of returning to their ceiling levels. No general increases are expected for steel and aluminum prices although there will later probably be some selective revisions in mill products of both. Nickel, still extremely scarce, is a question mark.

Most steel firms contacted by THE IRON AGE anticipate no immediate increases, but what happens in the future depends on forthcoming wage negotiations. Some minor adjustments are being studied by some steel firms now to relieve pressure on items like carbon steel bars, hot-rolled sheet, light gage galvanized sheet, some sizes of cold-finished carbon steel bars and drawn alloy bars.

Talk of Downtrend

Marginal producers may be closest to making adjustments. A go-easy attitude is evidenced by some who talk of slowness of basic marketing. Feeling in these circles is that competition may force some downward revision.

Aluminum presents a similar picture. Mill products were boosted a total of 9.2 pct in the past year and a number of inequities have come up as a result. Some revision may be in the cards to restore normal relationships.

But aluminum, again like steel, is moving near balanced supply and demand. Several items, already on the soft side, are selling below old ceilings. This could spread and result in price cuts. Much depends on U. S. stockpiling.

Neither steel or aluminum wants to raise prices and give labor ammunition for the coming wage talks. And both feel it would embarrass the Republican Administration in Washington if prices were jacked up.

Sighting Future Markets

Aluminum has another reason for keeping prices as low as possible. It's doing a selling job. Not for today but for tomorrow—aiming at some big tonnage markets that cannot be cracked if the price is too high.

Only a few selective ceiling increases were permitted for copper—about 90 pct of the industry being held under the 24½¢ per lb lid. Much pressure was applied by producers and it got them nothing but a possibility that the ceiling might be raised 3¢. Meanwhile, Chilean copper sold at 36½¢.

It came as no surprise that copper prices shot skyward with the end of controls. The over-long and over-severe restrictions are also at the root of the current multi-price confusion which is at least as bad as it was under the ceiling price regime.

OPS Snubs Pressure

Mild pressure brought to bear on OPS to lift the magnesium ceiling bore no results. The post-decontrol increase in magnesium prices was attributed to higher costs.

Early in the controls period scrap metals prices were drastically rolled back.

METAL PRICE TRENDS: Free Vs. Controlled Markets

Cents per lb except as noted.	Steel			Aluminum				Copper				Nickel		Zinc		Lead		Magnesium	
	Ingots, Pgh (per net ton)	Finished Steel*	No. 1 Heavy Melting Scrap** (per gross ton)	Primary Pig	2S Sheet (0.081 in.)	Old Sheet Scrap	Secondary Ingot (No. 13)	Primary Ingot	Sheet	No. 1 Scrap	Secondary Ingot (No. 305)	Electrolytic	Scrap	Prime Western	New Scrap Clippings	Primary Pig	Soft Scrap	Primary Ingot	Sheet (10 Gage)
February 7, 1951	$52.00	4.131	$43.00	18.0	31.2	15.50	33.75	24.50	41.03	21.50	35.00	53.55	95.0	17.5	14.75	16.8	15.13	24.5	68.0
Before Decontrol	56.00	4.376	42.00	19.5	34.1	7.25	20.80	24.50	45.52	19.00	33.00	63.08	35.5	11.5	6.50	13.3	11.00	24.5	68.0
March 24, 1953	56.00	4.376	44.08	19.5	34.1	9.50	25.00	30.75	47.01	25.75	35.00	63.08	52.3	11.0	6.50	13.3	11.00	27.0	71.0

* IRON AGE Finished Steel Composite. ** IRON AGE Scrap Steel Composite.

QUOTAS: Civilian Business Freed

Controlled materials producers may book unrated orders after June 30 . . . Defense program priorities retained . . . Civilian output curbs, program aid end with second quarter.

Steel mills and other controlled materials producers are now free to book unrated orders for steel, copper and aluminum for delivery after June 30.

Lifting of the cloud of doubt was part of the final action on Monday which set up Defense Materials System and takes the government out of the civilian side of the supply picture as of that date. This was brought about by issuance of DMS Reg. 1 (production) and DMS Reg. 2 (construction) to govern defense programs identified by the symbols A, B, C, D, and E after June 30.

End Civilian Aid

Both controls and program assistance for civilian production were removed, beginning with third quarter, by issuance of Dir. 21 to CMP Reg. 1 and Dir. 11 to CMP Reg. 6.

The program symbol D is reserved by National Production Authority for special assistance for defense supporting projects which may be certified to the agency by Dept. of Defense or Atomic Energy Commission.

State Their Needs

As now set up, Defense Dept. and AEC will provide statements of what their quarterly requirements will be in the way of the three materials, steel, copper and aluminum.

NPA or its successor will figure out what the share of each "producing unit" will be. This amount of tonnage must be reserved for defense orders and directives.

Defense contractors and subcontractors will use the A-B-C-E symbols to identify orders drawn against the defense setaside. They will use preference ratings for procurement of products other than controlled materials needed to complete schedules.

Who Gets What

Defense contractors will get authority to draw against the defense reserve in this way:

Manufacturers of Class A products for A-through-E programs will get authorized production schedules, allotment authority for controlled materials, and priority authority for other materials.

Manufacturers of Class B products who hold rated orders from A-through-E contractors will be permitted to self-assign the B-5 symbol to orders needed to meet these rated orders.

Defense construction will also be identified by the A-through-E symbols and contractors will be given authorizations after filing form DMS-4C which is a streamlined version of the old CMP-4C (which will be used till the new forms are ready).

Manufacturers of both A and B products who are unable to obtain supplies for MRO purposes needed to fill rated orders are permitted under DMS to self-authorize orders to get them.

Civilian Quotas Canceled

Under DMS, all CMP allotment authority issued for the third and subsequent quarters for A-through-E programs is confirmed and revalidated.

All unused allotment authority for all civilian production for third and later quarters is canceled. Also, the preferential status of any civilian order is removed

However, authorized controlled materials orders accepted for shipment before July 1 but carried over till later must be given preference over new unrated orders.

One exception is made in lifting government controls from civilian purchases of steel.

Because military need for nickel bearing stainless continues at such a high level, NPA says, it must continue to control distribution for both civilian and military needs for at least the third quarter.

FORMING 81MM MORTAR casings wears out extruding punches and finish insert dies quickly. Rheem Mfg. Co., Pueblo, Calif., reports exceptionally long life with its Cr-Mo-W punch and die. Rheem says it has run 30,860 pieces on its extruding punch, 80,000 units on its finish insert die. Above extruding punch (right) and finish insert are shown in action during hot cupping operation.

PREFABS: Aim For 10 Pct of Starts

Last year 57,000 new homes were prefabricated . . . Totals 6 pct of all new home starts . . . New models will have air conditioning . . . Many other built in features coming soon.

Eleven years ago representatives of five prefabricated housing manufacturers met at Chicago. Their goals: To find where prefab housing was headed, and shape that end if possible.

Last week the same group met at Chicago. The founders had done their work well. Over 100 men, representing 40 companies, were present at the meeting of the Prefabricated Home Manufacturer's Institute.

The industry is still moving rapidly ahead. At least three major producers have signed with a major air conditioning manufacturer. The prefab home of the future will offer built-in air conditioning and heating as an optional feature at a reasonable price.

The sales figures announced at the meeting indicate that the prefab really hit its stride in 1949. That year the peak production month saw 1800 homes produced. The next year, 1950, was a boom year, and peak month production was 4400 homes.

Homes Keep Rising

In 1951 peak month production was 3400 and a total of 55,000 homes were produced during the year. In 1952 the figure rose again to 4500 homes in the peak month, and 57,000 for the entire year, or 6 pct of the new homes erected.

Last year there were 5000 builders of prefab homes, and though the level for 1951 and 1952 ran about one fifth below the peak 1950 level, builders are counting on an increasing number of dealers and selling gimmicks to push prefabs up to 10 pct of new home starts "soon."

The tie-in of prefab homes with built-in air conditioning is important. Air conditioning has recently given strong indications that it will move down into lower cost homes. Prefabs, with 60 pct of their sales in the $8000 to $12,000 price range, and having produced one quarter of the homes that sold for less than $8000 in 1952, could reinforce that movement strongly.

Other trends that can be expected to develop: Increased use of steel in prefabricated homes (THE IRON AGE, Jan. 29, 1953, p. 58); increased incorporation of plumbing, heating, electrical equipment in the prefabricated sections; washers, dryers, dishwashers, garbage disposal units, and even TV, as integral parts of the basic house; stressed skin paneling; increased use of plastic, steel and aluminum.

The business prospect for 1953 is seemingly good.

Building Hits Record Stride

Supported by tremendous backlog of uncompleted work, the construction industry is off to a good start and may exceed last year's record dollar volume.

Expenditures in February declined less than normal for this time of the year, totaling $2.2 billion.

Added to the January figure of $2.3 billion, outlay so far this year is $4.5 billion. February's unexpected high volume marks the 15th successive time that a current month's total exceeded expenditures in the same month a year earlier.

Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Fuze, 840000, $806,870, National Vendors, Inc., St. Louis.

Cartridge, tracer, 220000, $1,912,020, Western Cartridge Co., East Alton, Ill.

Breech ring forgings, 292, $139,546, Cameron Iron Works, Houston., *J. W. Fryer.*

Metal parts, cartridge, Item A, 41.70 units, B-110.85, C-2.70 ea, D-16.10, $119,016, Century Engr. Corp., Cedar Rapids, Ia.

Body & extension, body for fuze, bomb tail, Item A, 50,000 ea, B-50,000, C-21,000, $95,500, Dinges Corp., Hanover, Pa.

Casket, burial, metal, Job, $76,903, Cincinnati Coffin Co., Cincinnati.

Heater, electric motor driven, 1064, $1,457,680, American Air Filter Co., Inc., Moline, Ill.

Heater, gasoline, 2010, $2,753,700, American Air Filter Co., Inc., Moline, Ill.

Sling bomb hoist, 2248, $150,143, Winans Engr. & Mfg., Layton, N. J.

Pump assy, 191 ea, $67,706, East Moline, Ill.

Bomb, 87010, $2,590,287, E. V. Camp Steel Works, Atlanta.

Shell, HE, 105 MM, 477468, $3,127,415, Rheem Mfg. Co., New Orleans, *E. J. Kinebrew.*

Fuze, mine, 1400000, $278,110, Pan American Metal Products Co., Inc., Miami.

Generators, 25, $117,750, Consolidated Diesel Electric Corp., Stamford, Conn.

Engine, assy, 225, $1,102,500, ACF Brill Motors Co., Philadelphia.

Booster, 916000, $812,492, John R. Wald Co., Inc., Huntington, Pa.

Motor grader and material loader, 6 ea & 1 ea, $83,472, Caterpillar Tractor Co., Peoria, Ill.

Booster, 517000 ea, $527,133, Clary Multiplier Corp., San Gabriel, Calif.

Case, cartridge, T19, 543125 ea, $1,750,812, Norris-Thermador, Vernon, Calif.

Shell, illuminating, 865000 ea, $3,676,250, Kwikset Locks, Inc., Anaheim, Calif.

Fuze, 135000 ea, $107,446, Price-Pfister Brass Mfg. Co., Los Angeles.

Bayonets, M1, 75000, $457,000, Utica Cutlery Co., Utica, N. Y.

Parts for P & W aircraft engines, var, $114,857, United Aircraft Corp., East Hartford, Conn., *E. E. Champion.*

Spare parts for support of P & W engines, var, $959,424, United Aircraft Corp., East Hartford, Conn., *E. E. Champion.*

Spare parts for use on HTL-1-2-3-4 aircraft, var, $64,159, Bell Aircraft Corp., Ft. Worth, Texas, *Robert Hulings.*

Maintenance parts used on auxiliary power unit, var, $1,009,802, Airesearch Mfg. Co., Los Angeles.

Maintenance parts for F4U aircraft, var, $613,846, United Aircraft Corp., Dallas, *William H. Hough.*

Switch assys, var, $303,843, Revere Corp. of America, Inc., Wallingford, Conn.

Maintenance parts for AD aircraft, var, $371,519, Douglas Aircraft Co., Inc., El Segundo, Calif., *W. H. Hough.*

Relay assys, var, $235,553, Specialties, Inc., Syosset, N. Y.

Actuator, 103700 ea, $402,973, Lear, Inc., Grand Rapids.

Valve & reservoir assy, var, $282,265, Vickers, Inc., Detroit, *R. M. McCabe.*

Refrigeration units, var, $388,054, Airesearch Mfg. Co., Los Angeles.

Turbine & valve, var, $1,491,765, Airesearch Mfg. Co., Los Angeles.

Valve, squeeze grip and handle assy, 19200 ea, $60,223, The General Detroit Corp., Detroit.

Forgings for 280M gun T131, 28, $466,060, Midvale Co., Philadelphia.

Forgings for 280M gun 131, 14, $373,800, Bethlehem Steel Co., Bethlehem, Pa., *M. I. D. Sims.*

Replenishment of tank and combat, 4500, $149,265, Motor Wheel Corp., Lansing.

Navy Orders Air Force Boats

All but one of 102 aircraft rescue boats for which construction orders were just announced by Navy Bureau of Ships are to become Air Force property.

Three firms in the "small business" category signed construction contracts totalling about $5 million. This does not include cost of centrally-procured materials, estimated at $15,000 per vessel.

Stonington Deer-Island Yacht Basin, Stonington, Me., will build 60 of the 63-ft crash boats. Sagstad Shipyards, Seattle, will build 23, and Detroit Basin, Inc., of Detroit, will construct the remaining 19.

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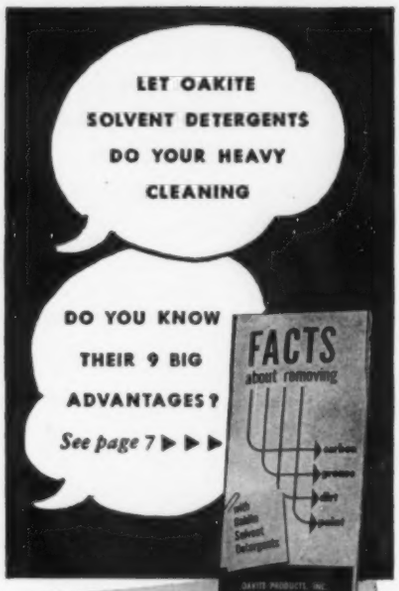

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Industrial Briefs

Name Changed . . . DIAMOND ALKALI CO., Cleveland, has changed the name of its subsidiary, Kolker Chemical Works, Inc., New Jersey, to Diamond Alkali Organic Chemicals Div., Inc.

New Division . . . MICHIGAN TOOL CO., Detroit, has formed a separate division to manufacture and market a line of industrial chemical products which have been under development for the past several years. The division will be known as the Shear-Speed Chemical Products Div.

New Distributors . . . ALLIS-CHALMERS MFG. CO.'s General Machinery Div. has appointed Jongeward Electric Motors, Inc., Yuma, Ariz., and Electrical Distributors, Inc., Lake Charles, La., as distributors.

Consolidated . . . BORG-WARNER INTERNATIONAL CORP. has reported the consolidation of the European branch of Mechanics Universal Joint Div. of Borg-Warner Corp. with the London office of Borg-Warner International in order to give a more comprehensive service to Borg-Warner accounts in Europe and particularly in England.

Congratulations . . . AMERICAN HOT DIP GALVANIZING ASSN., INC., presented Joseph B. Tate, Witt Cornice Co., Cincinnati, and Frederick C. Brightly, Jr., Brightly Galvanized Products Co., Cicero, Ill., with the Thomas M. Gregory Memorial Award for the years 1951 and 1952 respectively.

Going Up . . . BLACK & DECKER MFG. CO. will build a 126,800-sq-ft addition to their Hampstead, Md. branch plant, which will more than double the present size of the plant.

New Rep . . . RIVETT LATHE & GRINDER, INC., Boston, has appointed Lane Engineering Co., Buffalo, as representative in that area.

Underway . . . JOSEPH T. RYERSON & SON, INC., has begun construction on a completely new and much larger steel service plant for the firm's operations in Milwaukee.

Special Tubing . . . FLEXIBLE TUBING CORP., Guilford, Conn., has a $300,000 contract with the Air Force for production of special flexible tubing.

Combined Operations . . . FIRTH STERLING INC. and A. Milne & Co. have combined their operations in Ohio to provide improved service to the retail tool steel trade in that area.

Prestressed . . . TRUSCON STEEL CO., Youngstown, Ohio, will begin marketing Stressteel concrete reinforcing bars, and join in the promotion of prestressed concrete.

Good Buy . . . H. & B. AMERICAN MACHINE CO., Chicago, has purchased Karp Metal Products Co., Inc., Brooklyn.

New Quarters . . . MASTER CHEMICAL CORP., has opened new offices and plant at 13 Huron St., Toledo.

Established . . . BURROUGHS ADDING MACHINE CO. has established an Electronic Instruments Div. in Philadelphia.

Visiting Us . . . A team of ten specialists connected with the Austrian abrasives industry arrived in the U. S. recently for a 30-day study of American methods and techniques.

Well Done . . . WESTINGHOUSE ELECTRIC CORP., Pittsburgh, established the second highest record during 1952 with employee suggestion system ideas when 8346 acceptable ideas earned $144,057 for their originators.

Developed . . . THE NATIONAL SUPPLY CO.'s Spang-Chalfant Div. has developed a new grade of Spang Extreme Line Casing, with aluminum yield strength of 110,000 psi, which will be exhibited for the first time at the International Petroleum Exposition at Tulsa, Okla., May 14-23.

Plans . . . U. S. STEEL CORP.'s Michigan Limestone Div. plans to establish a limestone quarrying and processing plant at Cedarville in Michigan's upper peninsula.

New Moniker . . . PLANT SHIPYARD CORP. is the new name of Independent Engineering & Drydock Co., Alameda, Calif.

Completed . . . FARRELL-CHEEK STEEL CO., Sandusky, Ohio, has completed expansion of facilities for the production of steel castings up to 2000 lbs.

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"If Auto Sales Drop Off—Watch Out"

Will govern auto production and wield strong influence on steel market . . . High output for spring selling builds stocks high . . . Bullish factors outweigh bears—By *R. D. Raddant.*

A top steel sales executive declares: "The current steel market is as strong as it ever has been, but we are watching auto sales keenly. If the public is unable to absorb this terriffic production, the picture can change rapidly."

An automotive purchasing agent reports: "Steel is our main problem. We are making and selling more cars than at any time in our history, but if sales drop off, watch out."

The National Automobile Dealers Assn. warns: "The production difficulties of late 1951 and 1952 have now turned into the sales problems of 1953."

Sales Will Decide . . . It doesn't take much documentation to show that the critical point in the auto industry, and even to a great extent the steel industry, has become automotive sales. If auto sales continue strong, both industries will boom for an indefinite number of months. If sales slump sharply, the market can relax in a hurry for both industries.

There are some indications of a weakening auto market. *Automotive News* reports dealers' stocks have risen to the highest level in 2 years. On Mar. 1, new cars in dealers' hands, in transit, or in dealer warehouses reached 466,889, compared to 412,035 a month ago and 258,577 for the same date a year ago.

Used car stocks are also up sharply and most dealers complain the used car market is very poor these days.

But at the same time, the Detroit Auto Dealers Assn. reported February sales reached the highest level in 20 months, since June, 1951. What is the real situation?

Bulls Weigh More . . . Actually, the bullish symptoms outweigh the bearish ones. This is the time of the year when sales are traditionally lowest and late winter apathy gives many automotive sales people periodic ulcers.

Increase in dealer stocks is understandable in that record production levels are balanced against the year's slowest sales period. A year ago production was only about half today's rate.

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
Mar. 21, 1953...	136,623*	32,665*
Mar. 14, 1953...	134,152	31,610
Mar. 15, 1952...	96,063	29,184
Mar. 8, 1952....	92,141	28,251

*Estimated Source: *Ward's Reports*

A week ago Harlow H. Curtice, GM president, assured his dealers in Chicago that he believed 1953 "will be one of our best years from the standpoint of physical volume as measured in automotive units and our biggest year dollar-wise." He forecast a sales volume of $9 billion, of which 20 pct will represent defense products.

Output Will Climb . . . At the same time Ford's Lincoln-Mercury Div. announced steps "to practically double its production within the next few weeks." Output of Mercurys is already double 1952 and Lincolns a third higher despite a 24-day strike.

Chrysler Corp. divisions are all on two assembly shifts with only manpower and steel shortages preventing higher schedules. Among independents, Packard, Nash Studebaker and others are operating at top capacity with no trouble reported in moving products.

Dealers Feel Pressure . . . However, there is no denying that dealers throughout the country are making sounds that indicate they are pressed to move some of their cars. Of course, there is a wide difference between distributors of different makes of cars. Not every car is receiving what is called "public acceptance."

Across the industry, there is little evidence to support a contention that the market is sagging. A great deal will depend on the May and June seasonal surge, but it is too early to talk about running for cover.

A slow week, or having to add $50 to a trade-in allowance can send a dealer into hysterics. The industry's plans and predictions are based on long range studies that have been more right than wrong in analyzing the market in the years past.

It's a Deal . . . Kaiser Mfg. Corp., subsidiary of Kaiser-Frazer Corp., last week bought Willys-Overland Motors for an estimated $62.3 million. The deal will go to stockholders for approval Apr. 24.

The K-F manufacturing subsidiary will change its name to Willys Motors Corp. and continue to make the Willys-Overland auto line.

K-F is the sixth largest employer and has the fifth largest payroll in Michigan. Its $100 million annual pay is exceeded only by the automotive Big Three and Briggs Mfg. Co. Michigan Bell Telephone Co. also exceeds K-F's 20,000 employees.

Bulk of K-F's employment is concentrated at Willow Run where 17,000 workers are employed in automotive and aircraft work. Others are at the Detroit engine plant and two outstate plants.

PLASTICS:

Keating confirms Chevrolet will build plastic Corvettes by June.

Chevrolet's plans to produce the plastic Corvette were officially confirmed last week by T. H. Keating, division general manager.

"We expect to build 300 in the 1953 model year," he said, "with a substantially increased volume in the 1954 model year."

Plans for the Corvette were first disclosed in this column (IRON AGE, Mar. 5, 1953, p. 128). Sources were overly optimistic about production dates. Mr. Keating said production will start in June, which should bring the Corvette out shortly before Kaiser-Frazer's plastic convertible.

May Stay With Plastic

The official announcement indicated that future Corvettes would continue to be built of plastic, although Chevrolet originally had contracted with Fisher Body for steel bodies after the original 300 plastic run was completed.

"We're exploring a new field, Mr. Keating said. "Foreign sports cars have added up to less than 1 pct of total car sales in this country. What we learn about making plastic bodies may be the most important result of this new development."

The fiberglass cars, as planned by K-F, Chevrolet, and possibly other large manufacturers, may constitute the major development of postwar auto history. Regardless of whether or not they succeed, their manufacture will be the biggest exploration at one time into new fields of market, materials, and methods.

Auto Employment Hits New High

Booming automotive production and defense orders handled by the industry combined to establish the highest employment mark in the automotive industry's 57-year history during January.

George W. Mason, president of Automobile Manufacturers Assn., said a total of 940,000 workers were employed in motor vehicle and parts plants in the first month of 1953. This tops by 4000 employees the previous high of 936,000 set in March 1951.

Employment made its upward surge during December and January when the current production race was touched off by new models and the imminent ending of production controls.

PRODUCTION:

Studebaker frustrated by production and labor difficulties.

Most frustrating experiences in bringing out this year's new models were endured by Studebaker. Production is now rolling but the sting still lingers.

Studebaker gambled extensively on the most radical styling changes of the year and seemed assured a fat sales return when the new line was enthusiastically received.

But with the model changeover came production troubles that held up full scale operations. At the same time, a series of labor troubles hit the plant causing intermittent shutdowns and production line slowdowns.

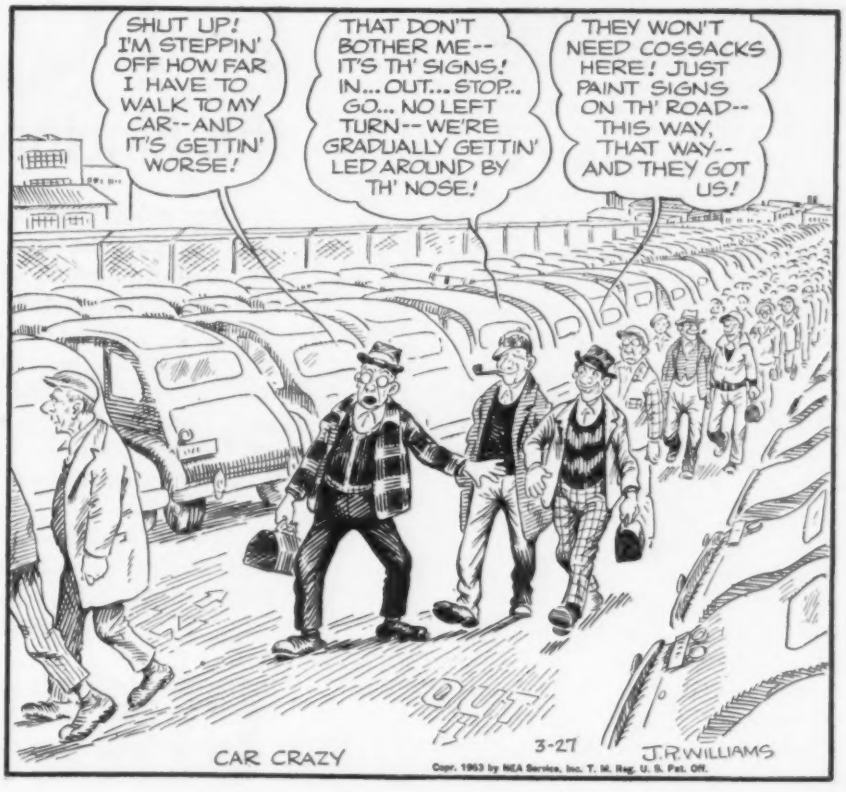
To Studebaker, this was adding insult to injury. Over a long period the company prided itself on excellent labor relations and built up perhaps the best record in the industry. While these troubles were going on, Studebaker watched Nash, its chief rival for leadership among the independents, soar ahead at record production.

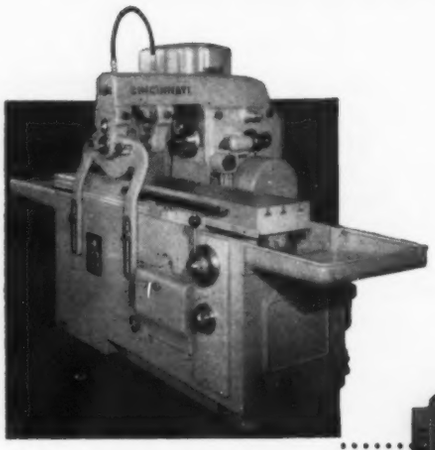
Plain Talk Helps

The labor troubles were so petty, however, that they eventually reached the ears of top United Automobile Workers officials. The UAW, as much as Studebaker, prided itself on the good record there and dispatched a top officer to look into the problem.

He told the workers, in effect, that they didn't know when they were well off, that continued petty bickering and work stoppages hurt their own best interests. Whether this had any immediate result is hard to determine, but it may be unprecedented in the industry.

THE BULL OF THE WOODS — By J. R. Williams


SHUT UP! I'M STEPPIN' OFF HOW FAR I HAVE TO WALK TO MY CAR--AND IT'S GETTIN' WORSE!
THAT DON'T BOTHER ME-- IT'S TH' SIGNS! IN... OUT... STOP... GO... NO LEFT TURN-- WE'RE GRADUALLY GETTIN' LED AROUND BY TH' NOSE!
THEY WON'T NEED COSSACKS HERE! JUST PAINT SIGNS ON TH' ROAD-- THIS WAY, THAT WAY-- AND THEY GOT US!
CAR CRAZY
3-27
J.R.WILLIAMS
Copr. 1953 by NEA Service, Inc. T. M. Reg. U. S. Pat. Off.

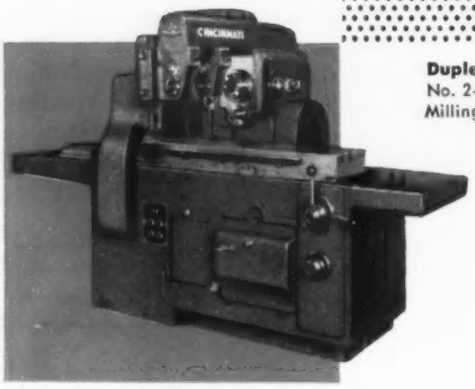


Plain style, new CINCINNATI No. 2-24 Automatic Milling Machine

new

new

Duplex style, new CINCINNATI No. 2-24 Automatic Milling Machine



Plain Rise and Fall style, new CINCINNATI No. 2-24 Automatic Milling Machine

new

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You can always look to Cincinnati Milling for the finest in machine tools. Cincinnati's newest is the No. 2-24 Automatic, an outstanding example of fine engineering and workmanship, combining advanced production features and easier, more convenient means of setting up the job. ¶ There are three styles: Plain, Duplex, and Plain Rise and Fall. All have two-way table feed cycles with cycle selector control; automatic backlash eliminator; automatic spindle stop; Dynapoise overarm. You may obtain complete information by writing for 28-page catalog No. M-1760. Brief data in Sweet's Catalog File.

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Ike's Tough Tax Talk Nips Tax Cut Bill

President spells it out—no tax cuts before budget's balanced, spending cut . . . Machine tool inventory stalled . . . Transfer lending functions when RFC falls—By G. H. Baker

President Eisenhower's firm reiteration of his tax reduction policy (reduce taxes after the budget's balanced) has taken the zip out of earlier House plans for ramming through Congress a "quickie" tax-cut bill.

Chairman Daniel A. Reed, R., N. Y., of the House Ways and Means Committee, continues to fight a losing battle for a 10 pct cut in individual income taxes on July 1. Many of his supporters are being converted to President Eisenhower's position that taxes cannot be cut until (1) a balanced budget is in sight, (2) inflationary tendencies are laid to rest, and (3) there is what he calls "proved capability" of trimming government spending. Politically speaking, Reed has lost his fight.

Capitol Hill observers interpret Mr. Eisenhower's policy statement as a warning by Mr. Eisenhower to veto any premature tax-reduction legislation that reaches his desk. And it is very doubtful at this point if "quickie" tax-cut proponents can muster enough support to override a veto.

Tool Inventory Stalls . . . Munitions Board is having difficulty in pulling together its overall report on government-owned machine tools. Congress has set a deadline of Apr. 1 for the long-awaited report, but complexity of the job has slowed the Pentagon's stock-takers.

On the basis of preliminary data, the report is expected to show that the government now owns about 500,000 machine tools. But probably more than 90 pct are now on lease to defense or civilian-industry plants.

Balance of the total is stockpiled at several warehouses. It is pointed out that many of the tools in storage are in poor condition. And they are taking up expensive warehouse space. If the report shows that this is the case, Congress will insist that unwanted tools be cleaned out.

Lending Won't Die . . . Government lending to business firms is to become considerably tighter and stingier in the months ahead, but it won't—despite rumors—be totally abolished.

Congressional committees are keeping a sharp eye on White House plans to liquidate the Reconstruction Finance Corp. RFC, now rounding out its twenty-first year of operation, has been a prime source of funds, both for business expansion and working capital purposes.

Shift RFC Functions . . . But abolition of RFC, when it comes, definitely will not mean sealing-off of government credit for business and industry. At least one of the reorganization plans now being studied by the White House contemplates the shifting of RFC lending functions to other government agencies.

"Annual sick leave?"

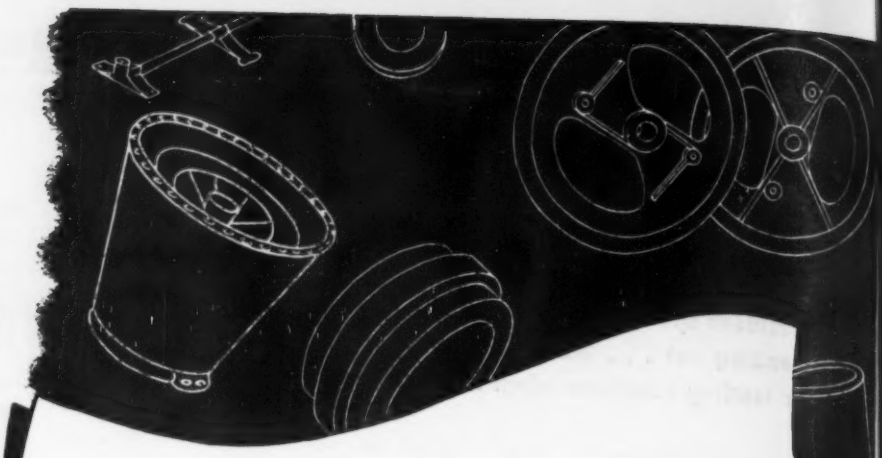
It is pointed out that the Federal Reserve Board could readily expand its industrial lending operations. The Agriculture Dept. could take over farm lending. Other agencies, such as the Office of Defense Mobilization and the Small Defense Plants Administration, could handle some loans.

Challenge "Good Faith" . . . Legality of "good faith" as a defense in federal antitrust suits is at issue again in the Senate. Two new bills (S. 1357 and S. 1377) now being studied by the Senate Judiciary Committee present sharply different approaches to the currently tangled problem of industrial pricing.

Legislation (S. 1377) backed by Sens. Homer E. Capehart, R., Ind., and Edwin C. Johnson, D., Colo., would permit sellers—acting in good faith and not in collusion with one another—to pay part or all of the cost of transportation on sales to customers, in order to meet a lower price a better located plant could offer.

Kill Competition? . . . Sen. Kefauver, sponsor of S. 1357, with 22 other senators, would prohibit "good faith" as a defense against antitrust charges in cases where price cuts were employed to eliminate competition. Kefauver maintains that "bad faith" is almost impossible to prove.

Capehart, on the other hand, makes it clear that enactment of his bill would not mean that sellers could return to basing-point selling as defined by the Supreme Court. It would not permit sellers to raise prices or to meet a competitor's higher prices. Nor would it permit sellers to undercut a competitor's price except to maintain a differential normally prevailing between or among them.



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DEFENSE: More For Military Dollar

Wilson program would streamline military machine . . . Aim is for greatest strength at least cost . . . Nelson Rockefeller heads group . . . Report expected Apr. 30.—*By R. M. Stroupe.*

Defense Secretary Charles E. Wilson's bold new program for improving the operation of the nation's cumbersome military machine is stimulating keen interest among Congressmen, government administrators, and private businessmen.

Basic goal is to get the greatest possible amount of armed strength within the limits of economical practices.

What Mr. Wilson is aiming for, in short, is more firepower for the military dollar.

Aim for Efficiency

To produce what he feels the country deserves, Mr. Wilson is working to reshape the unwieldy Defense Dept. into a smoothly-running, highly-effective organization capable of carrying out the "highly diversified activities" assigned to it. He wants to get recommendations by Apr. 30 on methods for streamlining and otherwise overhauling the defense apparatus.

Heading the Wilson-appointed committee is Nelson A. Rockefeller. It includes Drs. Vannevar Bush and Milton S. Eisenhower, Acting Defense Mobilizer Arthur S. Flemming, David Sarnoff, and Robert A. Lovett, former Defense Secretary.

This group will act, Mr. Wilson says, as his "confidential advisers on organizational and procedural problems," with authority to seek assistance from any source the group feels it needs.

Names Military Men

Three former Armed Forces leaders with distinguished records in World War II have been chosen as "senior military consultants" to the committee. These retired officers are Gen. George C. Marshall, former Army Chief of Staff and Defense Secretary; Fleet Adm. Chester W. Nimitz, former Chief of Naval Operations; and Gen. Carl Spaatz, first Chief of Staff of the Air Force.

Hopes are high that the reorganization committee may be able to offer initial recommendations to Secretary Wilson even before the end of April. The group, however, is not the only one in Washington studying military activities with its eye peeled for wasted dollars, time, and manpower.

Chairman Leverett Saltonstall, R., Mass., of the watchful Senate Armed Services Committee has designated subcommittees to examine portions of the defense program for traces of poor economy. One such group, with Sen. Styles Bridges, R., N. H., as chairman, is looking into aircraft procurement activities. Another, headed by Sen. Margaret Chase Smith, R., Me., is surveying the much-debated problem of ammunition supplies.

A member of both the subcommittees named is Sen. Harry F. Byrd, D., Va., veteran exponent of a more frugal approach to government operations. Sen. Byrd recently offered statistics to show that the Defense Dept. and military services began the second half of fiscal 1953 with unexpended balances amounting to more than $85 billion, exclusive of Army civil functions funds.

"OUR success is due to efficiency."

CONTROLS VIOLATIONS:

Settlement of cases will be speeded through . . . List three-point plan.

Washington promises fast action in winding up legal proceedings against firms charged with violations of price or wage controls.

Economic Stabilization Agency has agreed upon speed-up procedures designed to melt the heavy backlog of cases.

ESA has set these three points as a guide to liquidation of the enforcement cases:

1. Office of Price Stabilization is to determine which cases are serious enough to warrant referring them to the Justice Dept. All cases thus earmarked must be transferred by June 30.

2. National Enforcement Commission has cut from 75 days to 45 days the minimum length of time allowed litigants between issuance of a complaint and the deadline for appeal from a commission decision. NEC has power to assess penalties against employers in the form of disallowances for tax or other purposes of wage and salary payments which violate controls.

3. Uncontested cases—in which employers accept disallowance penalties—are to be certified directly to the Bureau of Internal Revenue for final settlement.

Will Begin Search for Uranium

New searches for uranium will start shortly in Colorado, Nevada and Utah, with the government underwriting 90 pct of the cost which is estimated at $24,000.

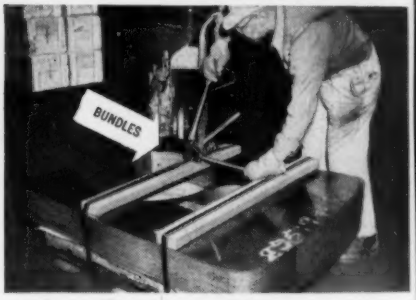
Selected to do the mineral exploration are: Gold Bar Mines, Inc., W. L. Weaver, Nevada Uranium Co. of America, and Jesse G. & Grant L. Shumway.

Acme Steel Strapping Insures S.A. *(Safe Arrival)*

Secures tractor parts for long-distance hauling . . . saves time and trouble for International Harvester

STRAPPING ON A TRACTOR. When International Harvester ships crawler tractors on open railroad flatcars, Acme Steel Strapping ties tool boxes, lubrication equipment and seat cushions in place for the journey.

SOLE SUPPORT for these IH Diesel engines is one Acme Steelstrap per engine. It secures the engine to a pallet for easy handling.

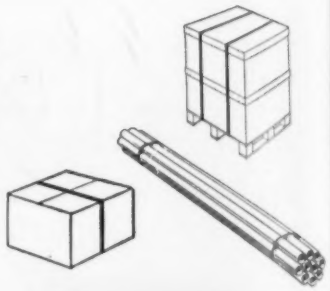


4,000 POUNDS of tractor dashboards are bundled together with Acme Steel Strapping for delivery from one International Harvester plant to another.

Whenever you receive anything secured with Acme Steel Strapping, you know that the shipper has taken care to get it to you safe. He has also beat the threat of damage-in-transit and has cut the cost of packing and shipping, too.

Acme Steel Strapping does all these things. It makes packing and loading easier and faster. It provides better protection during shipment, and helps insure S.A. (Safe Arrival).

Almost certainly, Acme Steel Strapping or Acme Steel Stitching Wire methods can help somewhere in *your* operation. If you have any kind of a shipping or materials-handling problem, we may have just the idea you need. Write Acme Steel Products Division, Dept. IA-33, ACME STEEL COMPANY, 2840 Archer Avenue, Chicago 8, Illinois.



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Construction Steel Demand Weakens

Supply, demand start leveling off for small structurals, reinforcing bars . . . Volume, prices remain firm at mills, but warehouses scramble for business—*By T. M. Rohan.*

The western steel industry's first leveling of supply and demand started in reinforcing bars and small structurals last week.

These items are made by almost all western mills, due to low mill investment and loose surface and metallurgical requirements. At the mill level and on major construction jobs, volume and prices are stable. But independent warehouses and fabricators are scrambling for business and price cutting is on the increase.

Bids Spread . . . One California firm reported losing small structural fabricating jobs by "substantial" margins in the last few weeks. On a typical $20,000 job, for instance, six out of eight bidders will be within $1000 of each other. One will be $1500 under and one close to bare cost.

It's common practice to keep good crews together and busy, but payroll cutting lately has been far beyond normal.

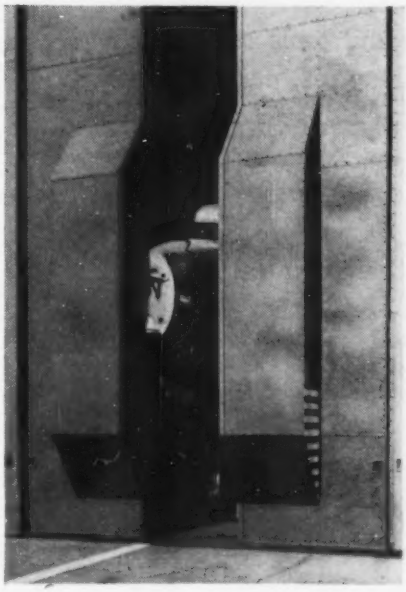
On a small routine job recently, one firm figured its rock bottom price at $3100. Yet it went for $2900, although profit margin is usually larger on small jobs due to higher unit cost. Firms which like hometown jobs for prestige reasons and bid low to get them find out-of-town fabricators underbidding them.

Big Jobs Easier . . . On larger jobs where there are only a few bidders, no unusual price cutting has taken place. Mills which have fabricating subsidiaries or divisions all have comfortable backlogs, but profit margins are being cut from about 20 pct a year ago to 10 pct on steelwork jobs in the $75,000 and over class. Plenty of work is available in bridges, schools and industrial expansions.

Heavy Re-Bar Capacity . . . The seven western states use 25 pct of U. S. concrete reinforcing bars due to heavy highway and public construction. Generally, 100 pct scrap charge can be used which, at present prices, is economical.

Larger western mills roll reinforcing bars principally as profit raising items using standard bar mills. Heavy tonnage can be put out in a shorter time than other products.

Amphibious? . . . The Army's newest and biggest amphibious cargo carrier, the 96-ton steel BARC built by Pacific Car & Foundry at Seattle, sank last week near San Francisco while under tow in heavy sea, with loss of three lives.



BAY WINDOW in plant door was built by Douglas Aircraft engineers at Santa Monica, Calif., to accommodate new DC-7 airliner now going into production.

Measuring 65 ft long and designed to carry up to 100 tons, the craft was the first of four of its type to be built by Pacific Car. The four wheels are each powered by 165-hp diesels and the 10-ft-high tires are the largest ever built for commercial use. A public show had been scheduled in San Francisco with later shipment to Ft. Story, Va.

Shells Climb . . . A new $5-million contract for 81-mm mortar shells was awarded to Rheem Mfg. Co. of San Pablo, Calif., last week. The step-up in U. S. arms output has pushed the plant's backlog to $12 million.

Shells are made by hot cupping and cold drawing. A new 800-ton knuckling press, 100-ton crank press and 150-ton hydraulic press have been ordered.

Bar Mill Starting . . . Seidelhuber Steel at Seattle expects to have its 10-in. used merchant bar mill in operation in 2 weeks. Good order backlog is reported and J. L. Edwards, formerly of Northwestern Steel Wire of Sterling, Ill., has been named plant superintendent.

Seattle warehouses are doing a brisk business with orders through May and June. Small jobs are getting off-the-shelf delivery on most items, based on increasing stocks expected from mills later on.

Big Copper Squeeze—Engineering discussions on how to squeeze a representative yield from 0.72 pct copper are under way in Arizona. San Manuel Copper Co. which last year was allotted $111 million for development of its Pinal County, Arizona, deposit started meetings with Stearns-Rogers Mfg. Co., who will build the plant. Estimated cost is $50 million, and discussions are expected to last for months.

About 10 million tons of ore will be mined annually to get 140 million lb of copper and 6 million lb of molybdenite.

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All four oils keep parts and tools cooler, help maintain closer work tolerances, permit longer runs between tool dressings. All are odorless and light in color. In addition, Sunicut 11-S and 209-S have high lubricating value and are nonstaining.

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Downtime Roadblocks Automation

Increased use of automatic machines makes reduction of downtime a must . . . Time lost in tool changing most important . . . Automation main topic at ASTE convention—By *E. C. Beaudet.*

"We've invested $250,000 in a new transfer machine for our plant, but we can only keep it running about 50 pct of the time." If a manufacturer were to make such a statement it would indicate that the designer of the machine had dreamed up a unit that was far too compliated for production.

R. F. Waindle, new ASTE head.

Ralph Cross, executive vice-president, Cross Co., Detroit, told those attending the annual meeting of the American Society of Tool Engineers in Detroit, last week, that failure of such a machine probably resulted from the designer's lack of record for the amount of downtime needed to service the machine.

One Kills All . . . As machining operations become more automatic and greater use is made of transfer equipment, the problem of downtime becomes increasingly important. Failure of one machine can shut down a complete line. When this happens valuable production time is lost.

Of the five main causes of downtime, tool changing is the only operation that hasn't undergone considerable mechanization. Reduction of downtime caused by tool changes will permit greater advances in automation.

Stick to Standards . . . Other causes of downtime, such as breakdowns, cannot be predicted, but adherence to Joint Industry Committee machine tool standards is the best way to reduce them.

Lubrication and chip removal are taken care of automatically and can be discounted as factors determining machine tool efficiency. Repairs and cleaning can be deferred in most cases until there is a lull in production.

Can't Delay It . . . As a result, tool changes remain the one cause of downtime that cannot be put off and is the only factor that needs to be considered in determining operating efficiency. Systemic procedures for tool changing in transfer machines are one way of increasing efficiency, and Mr. Cross reported that devices which will eliminate production downtime have already been developed.

Move Slowly . . . While the metalworking industry has achieved some degree of automation, the process has been slow, reported Otto C. Turchan, Turchan Follower Machine Co., Detroit.

To speed development, automatic machines are needed which can make more than just one particular product or part, just as versatile machine tools do.

Will Feed Back . . . When fully developed, the automatic factory will have a control system consisting of an information center, feed-back controls on each machine, and automatic inspection quality control of end products, Mr. Turchan said.

The information center will most probably be composed of digital computers, while the actual work will be performed by automatic machines having feed-back controls operating to meet the demands of the information center.

Select Automatically . . . Hopper feeds which automatically select and deliver parts to machines were described in a talk by J. R. Paquin, tool engineering consultant. These "self-serve" devices have been designed to meet the varied needs of today's modern machine and metalworking shops, he stated.

They are capable of helping themselves automatically to blank parts for processing, while finished parts are automatically ejected.

Engineering Does It . . . Expert engineering can provide self-serve mechanisms no matter how complicated the part.

Newly Elected Officers of the ASTE

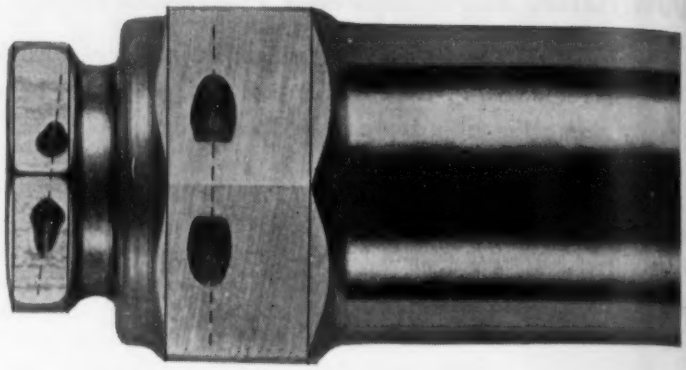
J. P. Crosby, first vice-president.

H. B. Osborn, Jr., second vice-president.

H. C. McMillen, third vice-president.

H. E. Collins, new ASTE treasurer.

Is this troublemaker causing headaches in your shop?



(Note that the cross hole drilled on the part to the left—without preliminary spot facing—is on an angle and is not parallel with the face of the part. Further, neither side of the drilled hole is clean. Now compare it to the straight, clean hole on the right, drilled after spot facing.)

Getting the answers to fabricating problems like this is part of doing business with Carpenter!

Isn't it worth a lot to know that the Carpenter Stainless you order is backed by a competent field engineering service to make Stainless fabricating better, easier, more economical? That's the way Carpenter likes to do business! It's one of the surest ways you have to get Stainless fabricating results you've always wanted.

And along with this helpful service, Carpenter brings you the finest Stainless money can buy. Originating in the same mill that invented the first Free-Machining Stainless, it means Stainless that feeds through your machines the same today, tomorrow and a year from now. So for really dependable Stainless backed by helpful shop service, get in touch with Carpenter. THE CARPENTER STEEL CO., 121 W. Bern St., Reading, Pa.

DRILLING CROSS HOLES

Recognize this common troublemaker? It involves drilling cross holes through angular sides of a hexagon head. Some shopmen tell us this job invariably causes them grief from the standpoint of high drill breakage and excessive wear on drill bushings resulting in poorly drilled holes. So one of our stainless service engineers recommended this easy cure: Before drilling, spot face where the drill enters the work. A simple spot facing fixture will do it. In this case the customer's fixture for drilling was O. K. for spot facing and the only tool needed to do this job was a drill ground with a flat end or a regular spot facer. If holes must be exceptionally clean, both sides should be spot faced.

Export Department: The Carpenter Steel Co., Port Washington, N.Y —"CARSTEELCO"

more than corrosion resistance

Carpenter STEEL

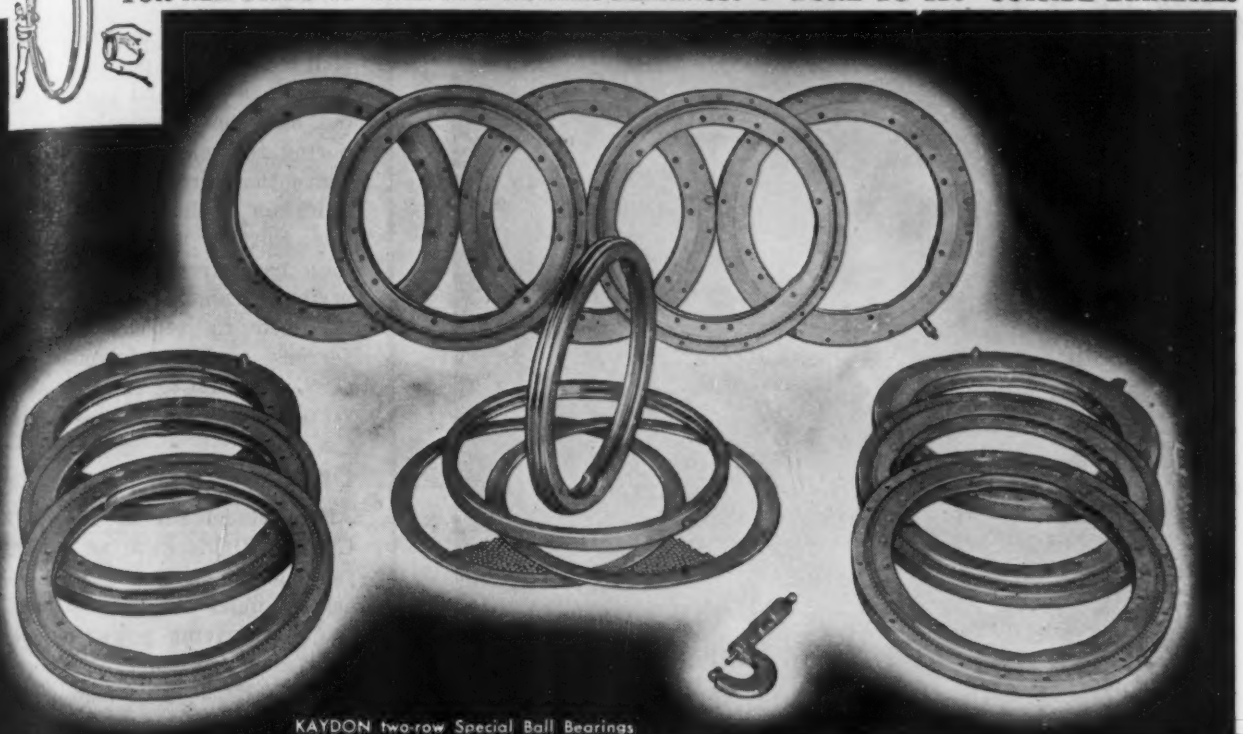
Free-Machining Stainless

takes the problems out of production

Call your nearest Carpenter Mill-Branch Warehouse, Office or Distributor

Contact KAYDON of Muskegon

FOR ALL TYPES OF BALL AND ROLLER BEARINGS: 4" BORE TO 120" OUTSIDE DIAMETER



KAYDON two-row Special Ball Bearings
8.062" x 10.687" x .750"

Dependable Life-Savers ...KAYDON-bearinged Piasecki HELICOPTERS

CONTROL movements of Piasecki HUP Helicopters . . . life-savers of the air . . . are transmitted to the spinning rotor blade assemblies by means of a swash plate that moves on unique two-row **KAYDON** Special Ball Bearings.

Control of the helicopter is obtained by the movement of its rotor blades. Each blade can move in six different directions while they are rotating. Thus the mechanism responsible for control movements is complex, important, and it demands the utmost in bearing-precision.

KAYDON met the challenge of this intricate bearing-problem with these special two-row, thin section, 8.062" x 10.687" x .750" ball bearings. Similarly, **KAYDON** cooperates with designers of many types of precision equipment to achieve their objectives.

We specialise in large, thin-section, light weight precision bearings for Aircraft, Automotive and Industrial Equipment.

THE KAYDON ENGINEERING CORP.

KAYDON Types of Standard and Special Bearings:
Spherical Roller • Taper Roller • Ball Radial • Ball Thrust
• Roller Radial • Roller Thrust • Bi-Angular Bearings

MUSKEGON • MICHIGAN

PRECISION BALL AND ROLLER BEARINGS

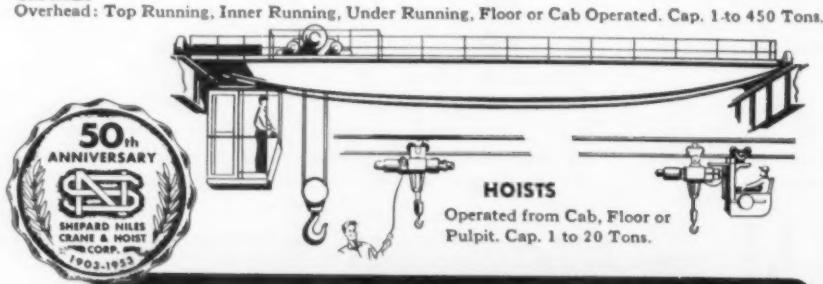
SHEPARD NILES CRANE

adds "Wings" to your work-in-process

Watch the way work speeds up when you install a Shepard Niles Crane in your plant! Why? Because through-the-air handling frees manpower for production—speeds the flow of materials—makes more floor space for men and machines. With a Shepard Niles Crane, you put unused ceilings to work—handle heaviest loads safely, easily, at low cost.

No doubt your plant would benefit from thrifty through-the-air handling. But which type of crane should you choose? Let the Shepard Niles representative help you in making this decision—he knows the importance of installing the right equipment from the start. Send for Bulletin describing Shepard Niles Cranes today—and arrange to have a representative stop by your office.

CRANES
Overhead: Top Running, Inner Running, Under Running, Floor or Cab Operated. Cap. 1-to 450 Tons.



HOISTS
Operated from Cab, Floor or Pulpit. Cap. 1 to 20 Tons.

SHEPARD NILES
CRANE AND HOIST CORPORATION

1432 SCHUYLER AVENUE, MONTOUR FALLS, N.Y.

—Free Publications—

Continued

Magnets

Walker lifting magnets' square shape makes it possible to clean corners in cars and pig bins without additional manual labor. Reported to weigh 50 pct less than conventional round magnets, these units can be obtained in almost any size. Further information is given in a new circular which also describes Walker's magnetic pulley designed to separate completely ferrous and nonferrous metals. *O. S. Walker Co., Inc.*

For free copy circle No. 15 on postcard, p. 103.

Drills

Alfing Model BK 25 Heavy Duty Upright Drills have an easily adjustable table and headstock which assures quick changeover from job to job. Driving power is derived from a vertically arranged constant speed AC supply motor either flange-mounted or V-belt driven. Power is transmitted directly to the driving head. Complete details are contained in a new bulletin. *Kurt Orban Co., Inc.*

For free copy circle No. 16 on postcard, p. 103.

V belts

High-capacity Texrope V belts for tough jobs are described in a new leaflet released by Allis-Chalmers Mfg. Co. It claimed that these belts carry 40 pct greater hp rating, are oil resistant and static conducting. The belts are recommended for use in tight spots, for compactness, for changed peak loads and other applications. *Allis-Chalmers Mfg. Co.*

For free copy circle No. 17 on postcard, p. 103.

Gear couplings

Sier-Bath flexible gear couplings are said to have a higher hp capacity than many conventional types and yet are smaller and weigh less. They can be assembled or uncoupled in seconds, and no wrenches or special tools are required. Advantages, applications, and engineering data are in a new bulletin. *Sier-Bath Gear & Pump Co., Inc.*

For free copy circle No. 18 on postcard, p. 103.

Locknuts, collars

Two new 4-p. bulletins, one on Flexloc self-locking nuts and the other on Hallowell steel shaft collars have been prepared by Standard Pressed Steel Co. The locknuts are one piece and all metal and can be used as stop nuts because they stay put at any point on a bolt or stud. Hallowell steel collars are fitted with Unbrako knurled cup-points. *Standard Pressed Steel Co.*

For free copy circle No. 19 on postcard, p. 103.

Lubrication

Molub-Alloy is a lubricant that employs petroleum as a vehicle instead of as the primary lubricating agent. The petroleum carries evenly spaced molecules of Molub-Alloy to the surfaces which are to be lubricated and protected. Manufactured as both a grease and an oil, the product can be used for applications ranging from heavy, exposed gears to high-speed spindles. Further information is contained in a new brochure. *Imperial Oil & Grease Co.*

For free copy circle No. 20 on postcard, p. 103.

Fasteners

Services offered by Milford Rivet & Machine Co. are the subject of a new 12-p. brochure. The publication tells how manufacturers of all kinds of assembled products can save money by explaining their plans to Milford engineers before product designs are frozen or are still in the pilot-run stages. *Milford Rivet & Machine Co.*

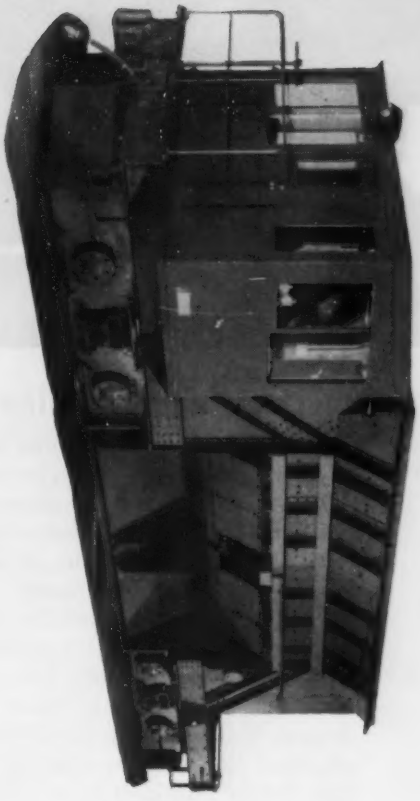
For free copy circle No. 21 on postcard, p. 103.

Stainless steel

The extra low carbon grades of stainless steel are fully explained in a booklet published by Armco Steel Corp. Some of the subjects covered are: Why carbon causes corrosion; how special steels conserve scarce alloys; why there is no need for a carbide dissolving anneal and other factors. *Armco Steel Corp.*

For free copy circle No. 22 on postcard, p. 103.

FOR THE VERY BEST
See ATLAS



TRANSFERS - SCALE CARS
COAL CHARGERS - COKE QUENCHERS

50-TON GABLE BOTTOM ORE TRANSFER

Car is equipped with hydraulically operated discharge gates and brakes, and is provided with steel plate trucks. The operator's cab is overhung at one side to give the operator a line of vision alongside the car. The car is equipped with electric space heaters.

ENGINEERS AND MANUFACTURERS
THE ATLAS CAR & MFG. CO.
1100 IVANHOE ROAD • CLEVELAND 10, OHIO

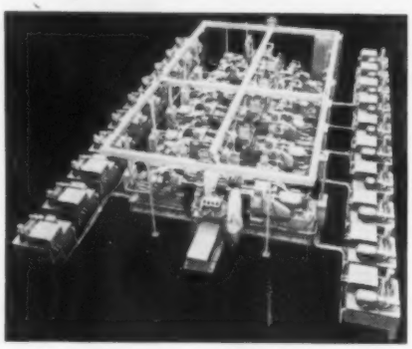
NEW EQUIPMENT

New and improved production ideas, equipment, services and methods described here offer production economies . . . just fill in and mail the postcard on page 103 or 104.

Self-cleaning strainer has improved design

Made in 2 to 36-in. pipe line sizes, a new automatic self-cleaning strainer removes fine suspended particles from raw or process water, and disposes of them in an automatic self-cleaning manner. The strainer consists essentially of a rotating drum into which straining elements are retained. Drum is mounted on a verticle shaft and housed in a cast iron body. Water or other liquid to be strained enters through an inlet at the bottom of the housing and rises on the outside of the revolving drum. The liquid passes through the drum, while the dirt and foreign matter are retained on the surface of strainer elements. A reverse flow flushes foreign matter from the strainer elements. Units are constructed of special non-corrosive materials to strain sea water, ammoniacal liquor, gasoline, oil, and various other liquids. *S.P.Kinney Engineers,Inc.*

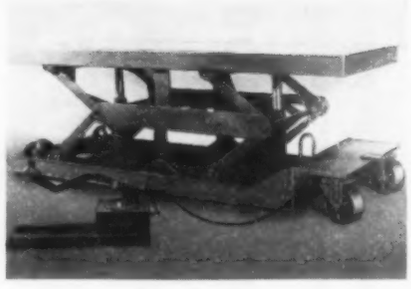
For more data circle No. 23 on postcard, p. 103.



Quantity and quality production features Holeway

New Holeway automatic processing machine incorporates mobile hydraulic power units which comply to JIC standards and make possible the highest continuity of production. The units shown on the outside provide fast replacement to keep down time to a minimum. Production on this Holeway is approximately 100 parts per hour. It completes 102 operations automatically on each engine block in 6/10 min including drilling, combination core drilling and counterboring, chamfering combination ream and chamfer, and combination ream and counterbore, trepan and ream. *National Automatic Tool Co., Inc.*

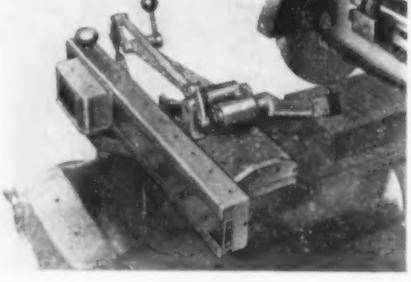
For more data circle No. 24 on postcard, p. 103.



Sheet feeding table has 3 to 10-ton capacity

Designed primarily for feeding large, heavy sheets to presses, brakes or shears, a ruggedly built double ram sheet feeding table can be invaluable as an aid in increasing production while lowering production cost. With a load capacity of 3 to 10 tons, this heavy duty table is equipped with sturdy swivel casters and smooth rolling wheels to give maximum maneuverability in storage loading areas and between machines. Table top measures 36 x 96 in. *Rack Hydraulic Equipment Corp.*

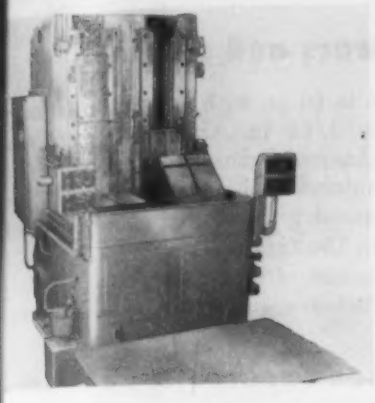
For more data circle No. 25 on postcard, p. 103.



Contour wheel dresser for 3-in. wide wheels

The KB11-3 Hoglund contour dresser fits on any horizontal surface grinder and will dress up to 3-in. wide, 20-in. diam wheels. It dresses any complex contour that can be entered by the diamond and to an accuracy of 0.0001 in. This compact balanced dresser has no interfering overhang; features magnetic-chuck mounting for short runs, permanent mounting at end of chuck for long runs. Its light weight enables it to be moved from one machine to another, dressing different forms on each grinder by changing the template. The dresser is manually operated, with a minimum of skill required. *Hoglund Engineering & Mfg. Co., Inc.*

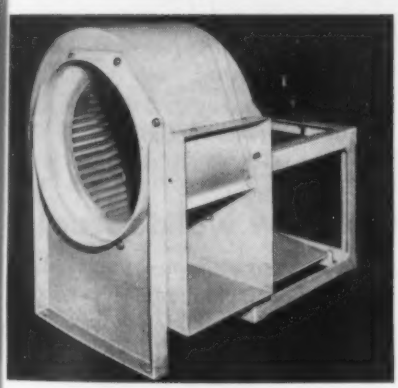
For more data circle No. 26 on postcard, p. 103.



Broaching machine

A dual ram surface broaching machine has 30-in. stroke and 4-ton capacity. Short stroke and light tonnage make the machine suitable for surface broaching of small parts at a high rate of production. Tilting work tables provide convenient loading positions for parts. The machine can be set at an automatic or semi-automatic cycle. All electrical and hydraulic circuits conform to J.I.C. standards. *American Broach & Machine Co.*

For more data circle No. 27 on postcard, p. 103.

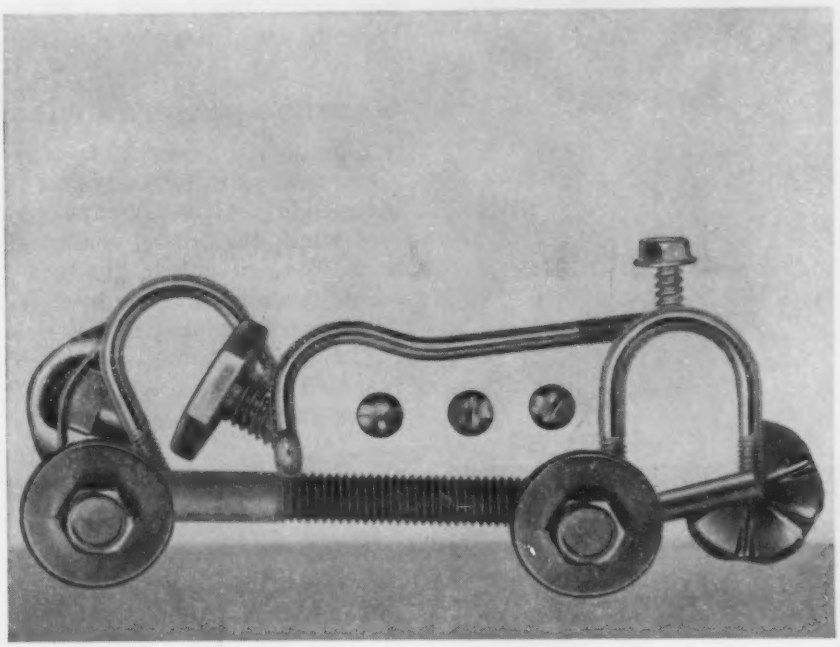


Blower-exhauster

A new compact blower-exhauster helps to solve ventilating, smoke, heat and fume removal problems for industrial plants. It does not require a cabinet or complicated super structure, but can be fastened directly to a wall, up out of the way. The angle of discharge is adjustable to any degree. Motor, bearings and other parts are designed for long-lived efficiency and quiet operation. *Brundage Co.*

For more data circle No. 28 on postcard, p. 103.
Turn Page

Designed and made for SPECIAL JOBS

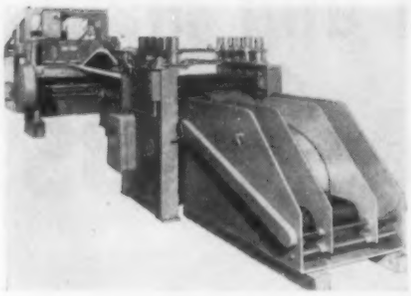


● Circle Ⓑ special fasteners can give you plenty of product design and production advantages . . . simplified design, extra holding strength, easier and faster assembly, lower unit cost.

Made by modern methods to meet volume demands, Circle Ⓑ fasteners are designed to your individual requirements by specialists who can demonstrate the practical advantages of calling in Buffalo Bolt. It will cost you nothing to get the facts. Simply write us.

● To simplify specifying and ordering standard fasteners . . . write for Catalog No. 51.

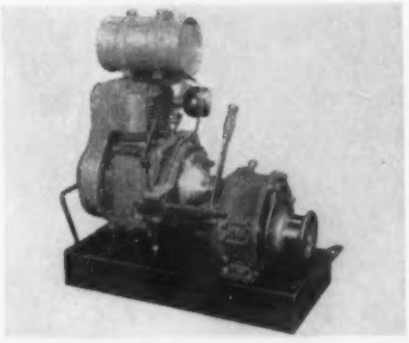
BUFFALO
BOLT COMPANY
Division of Buffalo-Eclipse Corporation
North Tonawanda, N. Y.
Sales Offices in Principal Cities
PRODUCERS OF CIRCLE Ⓑ PRODUCTS — BOLTS • NUTS • RIVETS AND SPECIAL FASTENERS



Machine de-coils, levels, shears and stacks

One attendant can operate the Union automatic shear line that de-coils, levels, shears and stacks automatically. It will handle flat material such as steel and aluminum; will work steel coils up to 13 gage and widths from 6 to 60 in. It can be set to shear lengths from 6 to 60 in. with a variation of only ± 1/64 in. One adjustment can change lengths. Sheared pieces are automatically stacked ready for removal. Operating speeds are up to 150 fpm depending on length to be cut. *Union Tool Corp.*

For more data circle No. 29 on postcard, p. 103.



Gasoline-powered winch uses capstan-type drum

A capstan-type drum has been incorporated into the design of a lightweight portable gasoline-powered winch for critical control of loads. The new unit, called Gypsi-winch, is a multi-purpose hoist for fast, low-cost handling of materials in industrial plants, warehouses. Standard models are equipped with power units ranging in size from ¾ to 7½ hp. Two gripper type handles facilitate moving the hoist while ½-in. lag bolts secure the all-steel base for pulling or lifting. The capstan permits accurate spotting of load, allowing the operator to skid the line by slacking off pressure while the capstan is rotating. *St. Anthony Machine Products Co.*

For more data circle No. 30 on postcard, p. 103.

Welding wire packaged for protection

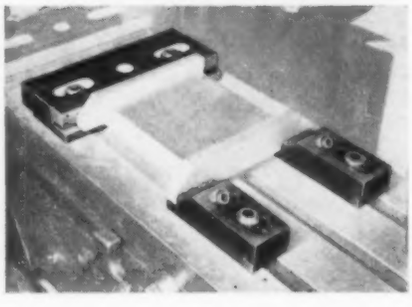
Stainless steel, tool steel and special alloy wire for the welding industry is available in a new form of package which protects the product and simplifies handling and shelving problems of both jobber and ultimate consumer. Ten pounds of bare wire in cut lengths are packed in clearly marked, sturdy fiber tubes with removable and replaceable caps. Six of the tubes are packed in labeled corrugated shipping cartons. Cut wire for gas and inert arc welding is available in all grades of stainless wire and the five common types of tool steel: water hardening, oil hardening, air hardening, hot work, and high speed. *Drawalloy Corp.*

For more data circle No. 31 on postcard, p. 103.

More power in less space with new walkie truck

A low lift walkie truck with short headroom and a great increase in overall power is capable of handling loads up to 6000 lb. The Jack-lift Electric packs twice the power in 48 pct less space and is suited for handling operations where ramps must be navigated. Capable of operating in most confined areas because of its compact design, the increased power is accomplished by the powerful compound-wound GE traction motor which gives controlled speed on level floors and has that extra power in reserve for ramps. It has two speed forward and reverse and all controls are in the handle head; operator has fingertip control. *Lewis-Shepard.*

For more data circle No. 32 on postcard, p. 103.



Vise eliminates complicated setups

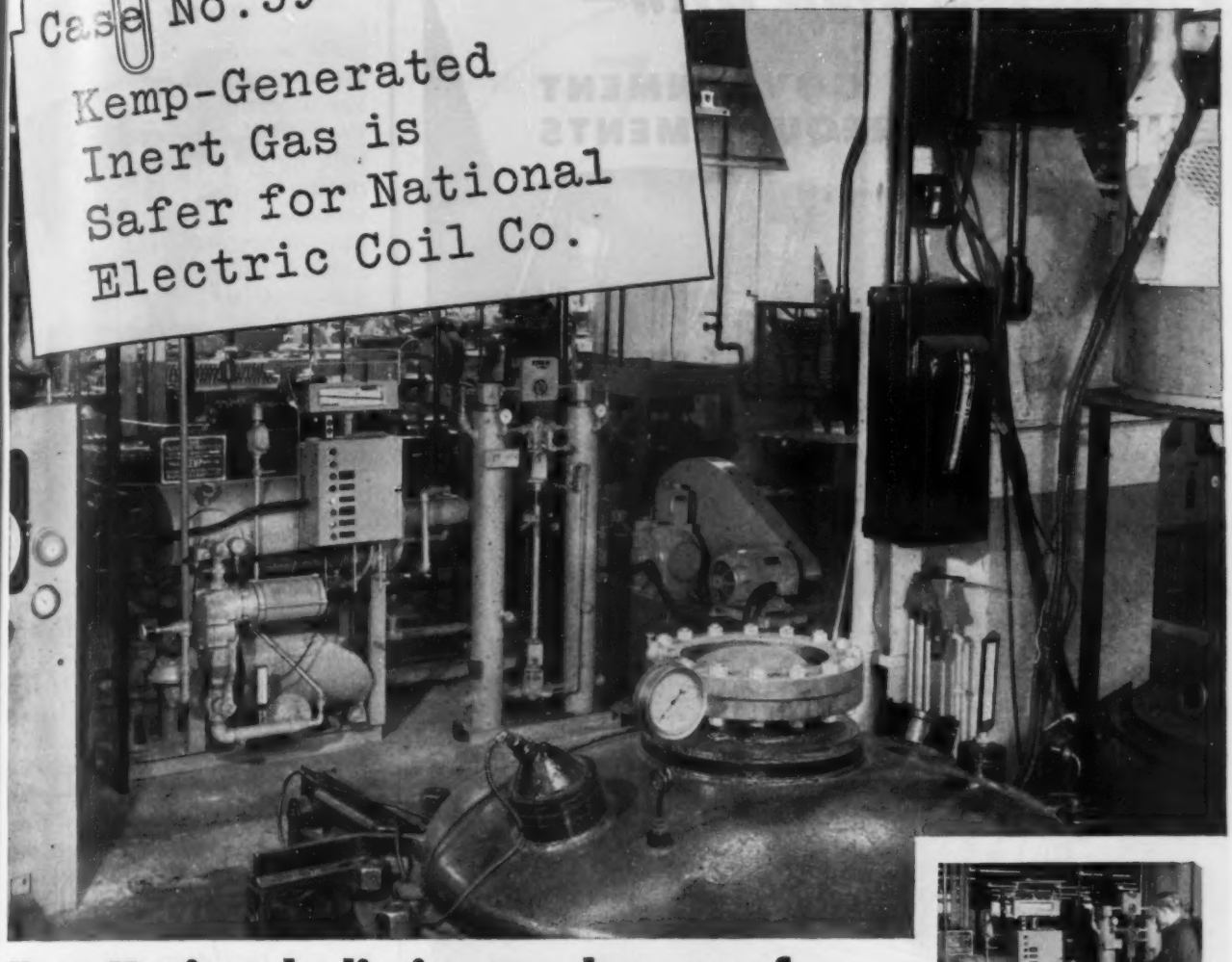
A new vise designed for quicker, more accurate setups and rapid loading and unloading of jig borers, millers, planers and shapers, allows loading and unloading by simply loosening one adjusting screw on the opposing clamp. Used in opposition with J&S jaw clamps, its hinged spring-loaded jaw secures workpieces rigidly to any machine tool. The hinged lip in-and-down action combined with the in-and-down action of the clamp holds the workpiece against the table with a force from ½ to 3 tons, and parallel. *J&S Tools Co.*

For more data circle No. 33 on postcard, p. 103.

Turn Page

Case No. 59

Kemp-Generated Inert Gas is Safer for National Electric Coil Co.



How National eliminates danger of explosion . . . cheaply and conveniently

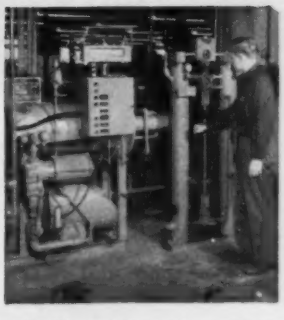
National Electric Coil Co., Columbus, Ohio, impregnates electric coils and windings by forcing in a hot sealing compound with inert gas under pressure. Formerly, the Company used air under pressure, but this created an explosion hazard. National then switched to CO_2 generated by melting dry ice. Although this decreased the danger factor, it was an extremely expensive operation and very inconvenient. To modernize this process and cut costs, National installed a Kemp Gas Generator, Model MIHE.

Kemp Solved the Problem—and More

Now National's Kemp installation delivers a completely satisfactory inert—eliminating any danger of explosion. And it delivers it at a *much lower cost* than the former generating method. In addition, Kemp supplies the gas at the rate required, plus a reserve for storage. As for convenience, the company considers their unit entirely automatic—it is practically never touched. According to Mr. D. E. Stafford, Chief Engineer, "It just sits there and operates."

Kemp Can Solve Your Problem Too

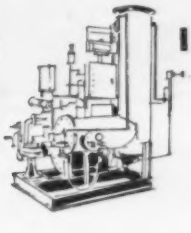
Every Kemp Generator is engineered for fast-starting, easy operation that saves both *time* and *money*. Kemp equipment delivers a chemically clean inert at a specific analysis . . . without fluctuations regardless of demand. And every Kemp design includes the latest firechecks and safety devices. For convenience, safety, and cleaner, more dependable gas—specify Kemp.



Mr. Wm. C. Graessle, of the engineering department, checking the operation. Generator features the Kemp Carburetor, part of all Kemp equipment, to deliver complete combustion . . . without waste, without tinkering.

***For more complete facts and technical information, write for Bulletin I-10 to:* C. M. KEMP MFG. CO., 405 East Oliver Street, Baltimore 2, Md.**

KEMP OF BALTIMORE

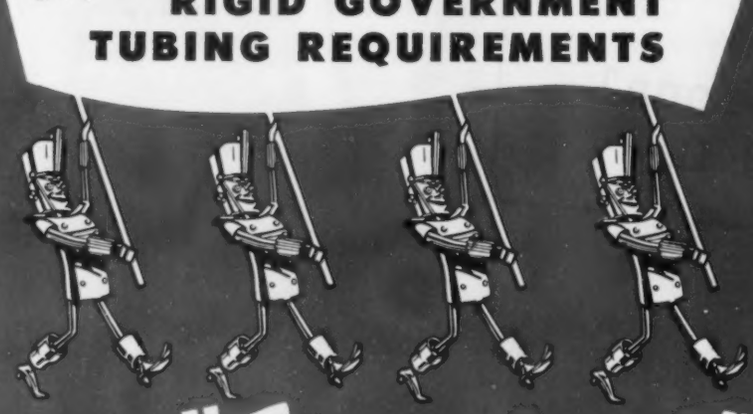


INERT GAS GENERATORS

CARBURETORS • BURNERS • FIRE CHECKS
METAL MELTING UNITS • ADSORPTIVE
DRYERS • SINGEING EQUIPMENT

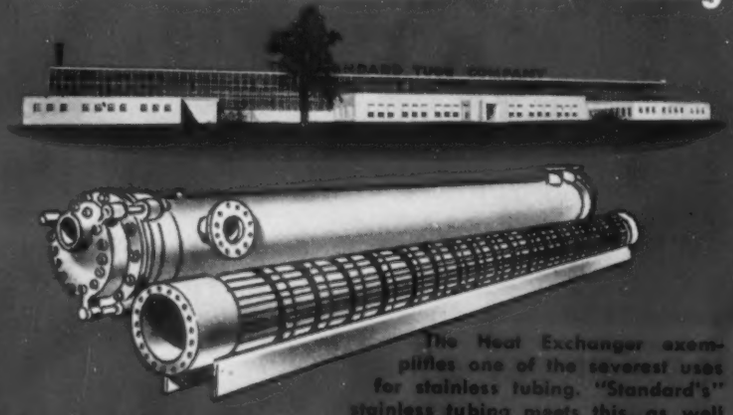
Keep in Step with—

RIGID GOVERNMENT TUBING REQUIREMENTS



SPECIFY "Standard"

for Welded Stainless Steel Tubing



The Heat Exchanger exemplifies one of the severest uses for stainless tubing. "Standard's" stainless tubing meets this, as well as many other different requirements for strength, and heat and corrosion resistance.

Deal with the Specialist among Specialists

A tubing specialist, like other specialists, knows his trade best.

When you deal with "Standard" you deal with a tubing specialist who manufactures millions of feet of tubing every month from stainless and carbon steel—and for 25 years has been serving all types of industry for mechanical and pressure tubing applications.

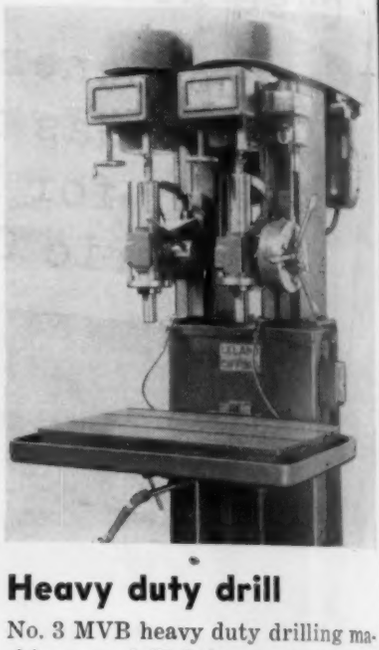
If you need stainless tubing, be sure you specify "Standard". It pays to deal with the tubing specialist among specialists.

Stainless Tubing Size and Thickness
⅜" O.D. to 3" O.D.
.028 to .095 wall
Carbon Steel Tubing
½" O.D. to 5½" O.D.
.028 to .260 wall

THE STANDARD TUBE CO.
Detroit 28, Michigan
Welded Tubing
Fabricated Parts
STANDARDIZE with "STANDARD" — It Pays

New Equipment

Continued



Heavy duty drill

No. 3 MVB heavy duty drilling machine can drill holes up to 1¼ in. diam in steel or 1½ in. in cast iron. It has a 24-in. swing, capacity of No. 3 or No. 4 Morse taper, and from one to four spindles. Power, hand or hydraulic feeds are available. Power feed has three feed rates, adjustable depth stop and safety slip clutch. The hydraulic feed has either plain or step-by-step controls. A four-speed motor with back gears provides eight standard speeds. A single speed motor with or without back gears or a four-speed motor without back gears can also be furnished for other speed ranges. On multi-speed machines, all speed changes including back gear shifting, are made instantly without stopping the machine or the operator moving from position. *Leland-Gifford Co.*

For more data circle No. 34 on postcard, p. 103.

Polyester resin

New polyester resin will not drain even from smooth vertical surfaces. It simplifies application of protective coatings to storage tanks, cinder block, concrete and various contoured objects. It is easily applied by brush, squeegee or spray; will stay put at substantially elevated temperatures. Translucent and pale buff in color, Marcothix Resin No. 1 may be cured in the same manner as ordinary liquid polyesters. *Marco Chemicals Inc.*

For more data circle No. 35 on postcard, p. 103.

Protective wrap

Spot-Seal, a new protective wrap for metal parts, applies instantly and without any fastenings to seal the wrap. It provides a tight, dustproof, water-repellent wrap that keeps out dirt and foreign matter, and protects finely-finished surfaces against scratches, abrasion and fingerprints. Spot-Seal sticks only to itself; can't damage metal surfaces. *Sherman Paper Products Corp.*

For more data circle No. 36 on postcard, p. 103.

Band saw blade

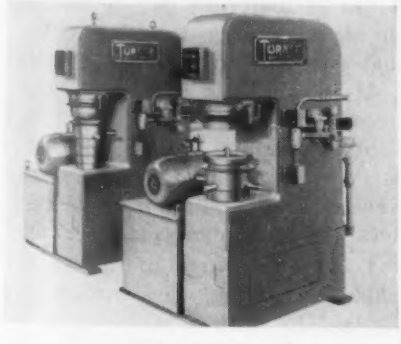
Economical cutting of hard-to-machine alloys is claimed for a new high speed steel band saw blade. Made from a red-hardness high speed steel, several types of Milford Rezistor blades are designed for production cutoff work and are effective for cutting stainless steel. At present the blade will be introduced on a rental-performance basis under the control of the Thompson Engineering staff. Sizes are ¾ and 1 in. widths with 6 teeth per in. in tempers suitable for specific applications. *Henry G. Thompson & Son Co.*

For more data circle No. 37 on postcard, p. 103.

Assembly press

A 50-ton hydraulic assembly press accurately maintains center distances in assembling inner portions of fluid couplings. The ram on the assembly press is set with an indicator, the stroke being electrically and hydraulically controlled so that the assembly of the tree members is accurately maintained. It is stated that the machine saves time and increases production output. *Turner Bros., Inc.*

For more data circle No. 38 on postcard, p. 103.



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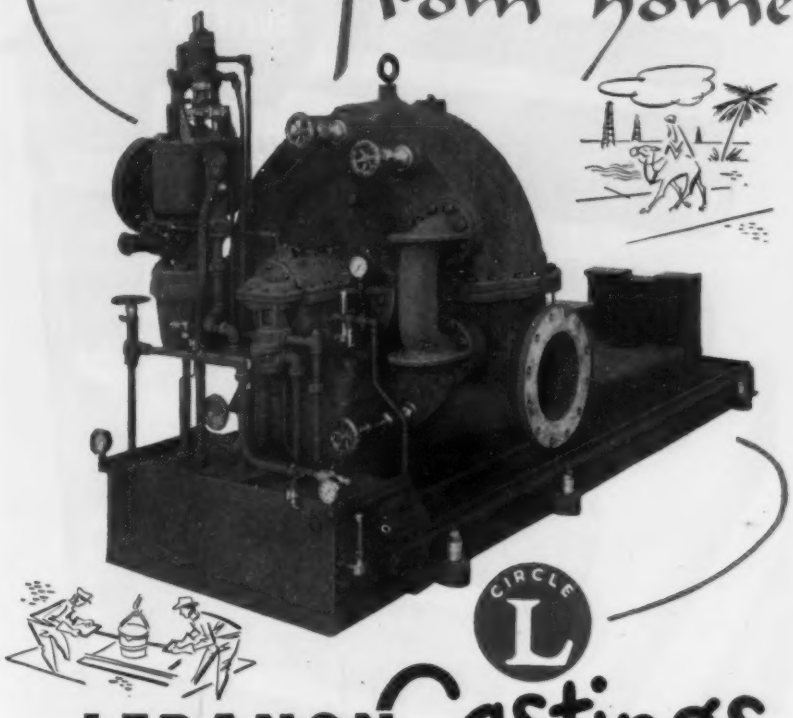
In turbines 7148 miles from home



CIRCLE L

LEBANON Castings are at work

ON the lonely oil fields of the Saudi Arabian desert nine turbines break the stillness with their steady whine of work. These are Terry Steam Turbine Company's Type C.S. Turbines, and all the castings in these turbines are made by Lebanon Steel Foundry. Driven by waste gas from the oil fields, they power heavy-duty pumps that deliver 100,000 barrels of oil a day.

Operating at 280°F., 450 pounds pressure, the turbines, which are among the largest natural gas turbines in the world, develop a mighty 1940 H.P. at 4400 R.P.M. Terry Steam and their customer, the Arabian-American Oil Company, know that satisfactory service is doubly important when replacement parts are thousands of miles away and repairs are costly. You can be sure that these factors figured prominently in the selection of Circle (L) Steel Castings, products of true craftsmanship.

You should see — STEEL WITH A THOUSAND QUALITIES — A 37-minute 16 mm full color sound film on the making of steel castings. For information write: Dept. A, Lebanon Steel Foundry.

LEBANON Castings

CARBON, SPECIAL ALLOY AND STAINLESS STEEL

CIRCLE L

LEBANON STEEL FOUNDRY LEBANON, PA.

SHENANGO Centrifugal CASTINGS ... KEY TO SAVINGS

use **SHENANGO BAR STOCK**
for superior quality parts!

IF you are looking for a superior bar stock, Shenango tubular and solid stock is for you! Shenango Meehanite Metal bars have exceptionally fine grain, higher tensile strength, finer, more uniform graphite dispersion. So naturally you can count on superior wear-life, and less chance of breakage or distortion in service.

Learn more about the money-saving qualities that make Shenango solid and tubular bar stock a preferred material for bearings, bushings, pump parts, liners, sleeves, gears, dies, gauges, and many other common and special parts. Send for the new Shenango Bar Stock Bulletin No. 152, containing additional information and a list of standard, conveniently stocked sizes.

SHENANGO-PENN MOLD COMPANY
Centrifugal Castings Division
Dover, Ohio
Executive Offices: Pittsburgh, Pa.

SHENANGO
ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE® METAL

—New Equipment—

Continued

Honing gun barrels

With Microdial (automatic feed) and Microsize (automatic sizing) features installed on a Model 606 or 612 horizontal Hydrohoner, gun barrels up to 4 in. diam can be

Microhoned within 0.0001 in. tolerances in a completely automatic operation. Because of its proficiency in removing stock, and generating the desired finish, the Microhoning process is given a versatile application on these horizontal machines, which can be constructed to handle gun barrels, tubing, and shafts, of any length. *Micromatic Hone Corp.*

For more data circle No. 39 on postcard, p. 103.

Coveralls

Fit, comfort and chemical resistance are features of coveralls made of a new lightweight, tough, acid and alkali-resistant Vinyon-N fabric. The Feon material is strong, cool, smooth, and is never stiff or scratchy. Admiralty gray in color, it will not show dirt readily. Garments are cut extra full for active men. All strain points are bartacked for extra strength. Full rolled seams, double stitched with strong Vinyon-N thread, will not unravel. *Fabric Div., Filtration Engineers, Inc.*

For more data circle No. 40 on postcard, p. 103.

Aluminum hand truck

A ton of materials can be carried on an aluminum handling truck, that weighs 57 lb and is 24 in. wide x 48 in. long. It is all aluminum construction and is equipped with Tobey aluminum, Timken bearings, permanently lubricated casters and wheels. Cast aluminum round corners eliminate damaged doorways and possible source of injury to employees using the equipment. *Tobey Mfg. Corp.*

For more data circle No. 41 on postcard, p. 103.

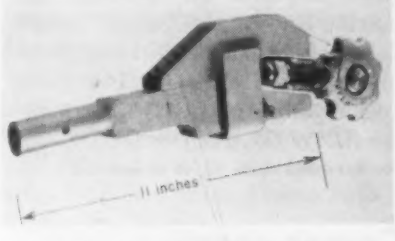
Degreasing agent

Finely ground cellulose fiber material with high absorbency is available for use in degreasing and drying operations employing tumbling mills. Absorbing more than eight times its own weight, Cottontex is said to do a fast, thorough job of absorbing oils, grease or any liquid from metals, plastics or any type composition. It is fast acting and soft to protect parts while in the tumbling process. *Cottentex Mfg. Co.*

For more data circle No. 42 on postcard, p. 103.

Valving wrench

An adjustable valving wrench is designed for insertion of valves in cylinders. With it one man can easily insert or remove high pressure cylinder valves, or bottled gas valves from cylinders. Its construction of tough steel alloy case hardened insures long life. Two jaws are adjustable: one from 15/16 to



1 3/16 in.; the other from 1 13/16 to 1 7/16 in. A secure grip on the valve wrench flats is accomplished by sliding the movable jaw along the handle. A 1-in. steel pipe extension attached to the wrench governs the amount of torque applied. *Superior Valve & Fittings Co.*

For more data circle No. 43 on postcard, p. 103.

Gasket material

Asbestoprene, a new gasket material developed from asbestos and neoprene, combines compressibility with heat resistance. With these properties, it fills the gap between compressed asbestos sheet and cork or rubber. The new material has good dimensional stability, does not corrode light metals and is resistant to oil, water, gasoline and antifreeze solutions. Automotive and similar applications are natural prospects for this material. *Victor Mfg. & Gasket Co.*

For more data circle No. 44 on postcard, p. 103.

Turn Page

This Picture IS WORTH 1000 WORDS!

Show Safety Saves!

to Your Drivers

"It's fun to watch the scenery; it's *safer* to watch the road."

2 "All right then . . . you won't make that mistake again!"

WHEN IT COMES TO TRAINING industrial truck operators, one picture is worth a thousand words. Clark's new "Safety Saves" movie is the only driver safety-training film in the materials handling field. It's a 30 minute sound movie, filmed entirely "on-the-job", and it's available to you on a loan basis.

You (and your drivers) will see hair-raising examples of how *not* to handle a fork truck, as demonstrated by Willie the Cowboy. After you've seen Willie's way, you'll see the safe, correct way to drive and take care of a truck. To help cut accidents and improve driver performance, *all* your drivers should see "Safety Saves". Use the coupon to indicate when you want it—the only cost to you is return postage.

1903 1953 FIRST FIFTY YEARS CLARK EQUIPMENT

CLARK ELECTRIC AND GAS POWERED FORK TRUCKS

AND POWERED HAND TRUCKS · INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIVISION · CLARK EQUIPMENT COMPANY · BATTLE CREEK 51, MICHIGAN

Send "Safety Saves" Date wanted_____

Alternate dates_____

Name_____

Firm Name_____

Address_____

City_____ Zone_____ State_____

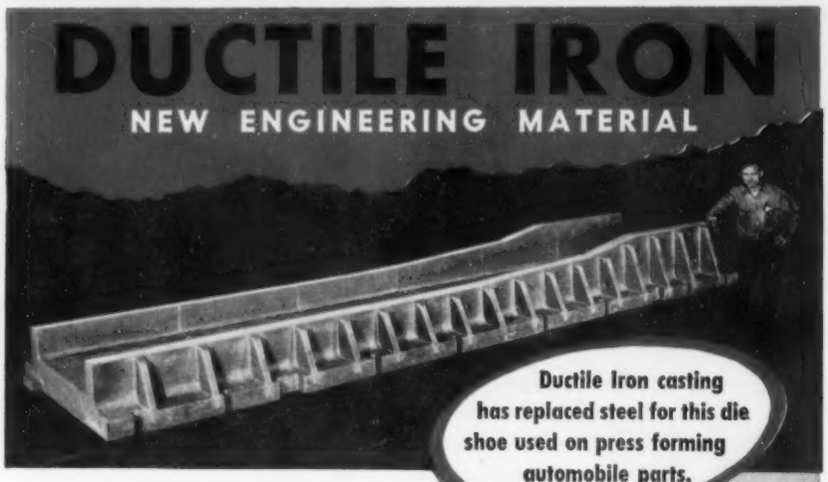
AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

Deluxe cab for Mercury tractors

Available for use with Mercury's Huskie and Super Huskie tractors a new deluxe cab increases operator comfort for all outdoor work. It's 12-gage, all steel body can be supplied to customers for mounting on their own tractors. Excellent operator visibility is obtained with a one-piece shatterproof windshield glass. Removable side doors and rear panel are optional. Desirable attachments for the weather conditions in the user's area include electric lights, electric windshield wiper, heater, defroster system, directional turn signal indicators. *Mercury Mfg. Co.*

For more data circle No. 45 on postcard, p. 103.

DUCTILE IRON
NEW ENGINEERING MATERIAL



Ductile Iron casting has replaced steel for this die shoe used on press forming automobile parts.

- TENSILE STRENGTH
  60,000 PSI, to 115,000 PSI
- ELONGATION
  As cast: approx. 3%
  Annealed: 15% to 22%
- YIELD STRENGTH
  45,000 PSI to 65,000 PSI

A variety of Ductile Iron castings

A pioneer in the production of this remarkable metal, the BELOIT FOUNDRY conducts a constant program of research and analysis to meet the growing demand for Ductile Iron. We will gladly answer inquiries about applications of Ductile Iron (or our other irons) to your products.

BELOIT FOUNDRY CO.
High test Iron, Alloy Irons, and Ductile Iron
Castings from a fraction of a pound thru 50 tons
BELOIT, WISCONSIN
BF
DETROIT OFFICE
8100 Lyndon Ave.
Phone Texas 4-1227
Chicago Office
8525 Vincennes Ave.
Phone Redcliffe 3-4114

Silver-bearing solder

A high-capillary, silver-bearing stainless steel solder can be applied with a soldering iron or torch at 430°F, yet reportedly produces joints stronger than those made with ordinary soft solder. It costs less, is easier to apply, and has an affinity for metals similar to that of silver-brazing alloys. No lead, zinc or cadmium is in the new solder which can be chrome plated. Color closely matches that of stainless steel. Deposits are nontoxic and ductile. Known as All-State No. 430 Solder, it is made in 1/16-in., 3/32-in. and ⅛-in. diam on 1-lb spools and in 5-lb ingots. *All-State Welding Alloys Co., Inc.*

For more data circle No. 46 on postcard, p. 103.

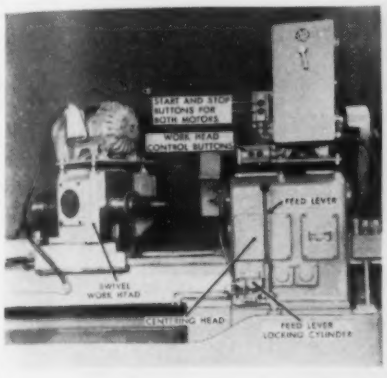
Corner guard

A corner guard for protecting merchandise and equipment from damage is adaptable to all types of storage on skids, pallets, and floor. It is made of heavy gage steel with a brilliant black and yellow lithograph finish; striped in accordance with National Safety Standards. It is constructed with reinforced gusset plate on the back so that it can slide directly under the load. *Randolph Metal Products Co.*

For more data circle No. 47 on postcard, p. 103.

Revolving workhead

A revolving workhead on an automatic centering machine assures uniform wall thickness on 81 mm howitzer shells. The shells are held and centered on a six-jaw, air-operated expanding driver. Three jaws near the open end operate positively from an air cylinder while three jaws near the bottom of the



bore operate by heavy spring tension to compensate for variation in diameter of the rough bore. The workhead spindle revolves at slow speed while the center drill revolves at the correct drilling speed. This combination provides accurate centering for hollow parts. *Seneca Falls Machine Co.*

For more data circle No. 48 on postcard, p. 103.

Automatic lubricator

Lubricating the wheels of a conveyer trolley can be done regularly, quickly and safely with a new automatic lubricator. It delivers a preset, constant shot of either oil or lubricant to each trolley wheel simply by the flick of a switch. When the system is serviced, the switch is turned off until the next lubrication. The unit is contained in a 40-in. section of I beam which fits into the conveyer track anywhere along its length, but it must be near an air line and a 115 v, 60 cycle electrical outlet. As each wheel reaches the spot on the track where the lubricator is installed, a coupler clamps the lubricant fitting on its hub and delivers the right amount of lubricant. *Alemite Div., Stewart-Warner Corp.*

For more data circle No. 49 on postcard, p. 103.

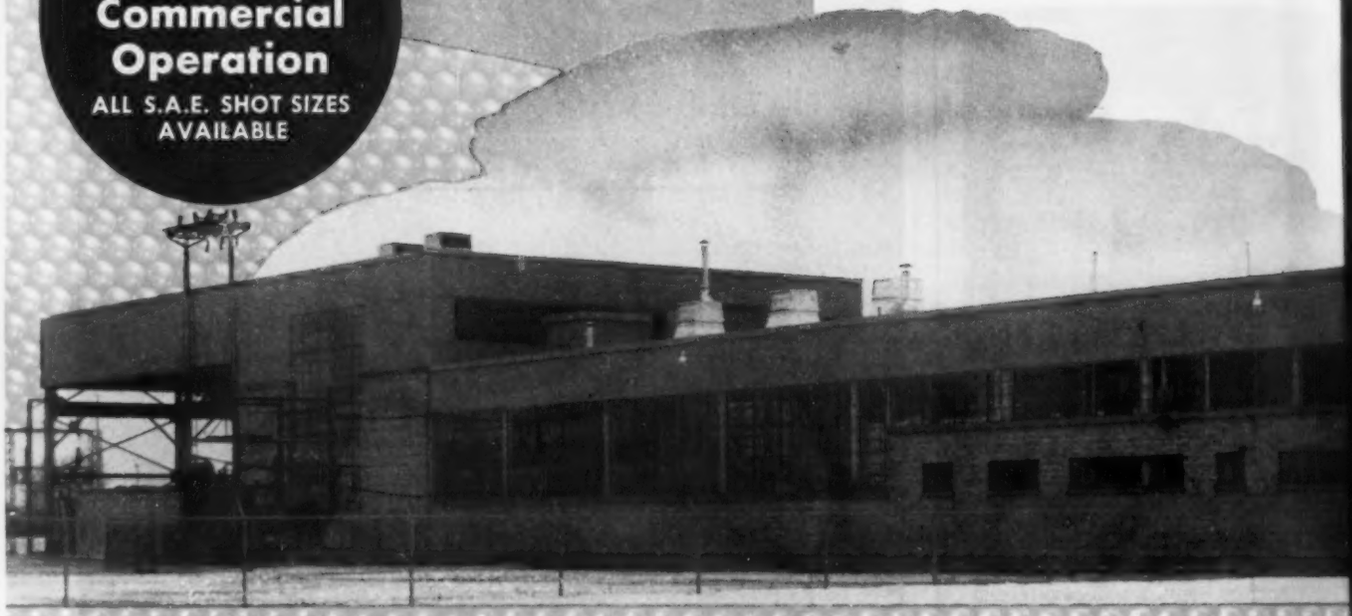
Turn to Page 120

American Builds World

to produce its *New* WHEELA

***PLANT Now in Commercial Operation**
ALL S.A.E. SHOT SIZES AVAILABLE

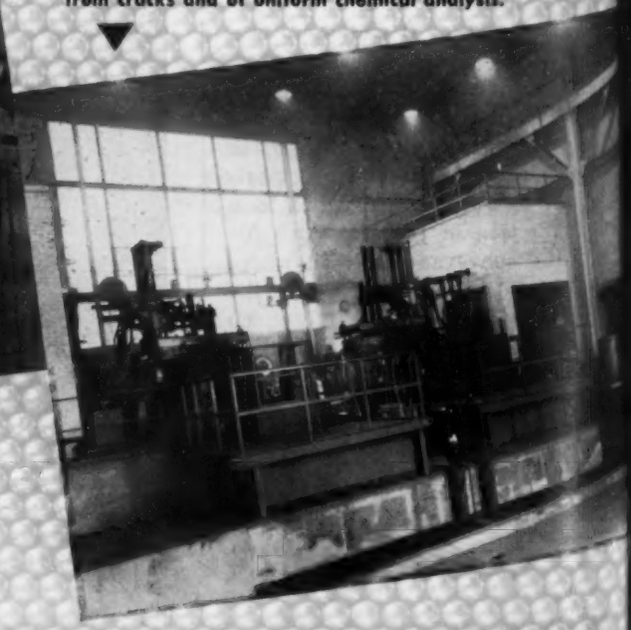
A FULLY HE EA



▲ New from the ground up, the building was designed
one purpose only — to produce the world's best abrasiv

Electric arc furnaces and *American's* patented shotting process produce round, solid shot free from cracks and of uniform chemical analysis.

▼



▲

Automatically controlled heat-treating equipment assures a non-varying metallurgical structure of tempered martensite for long life and economical cleaning.

WORLD'S LARGE

ld rgest Steel Shot Plant*

A ATOR® STEEL SHOT

HE EATED ELECTRIC STEEL ABRASIVE

he metallurgically superior steel shot
uniform quality for maximum economy
in blast cleaning operations

Blast cleaning history was made when *American* pioneered the first airless blast unit—the "Wheelabrator"; the first blast mill with endless belt conveyor—the "Tumblast"; the first Continuous Blasting Mill; and numerous other "firsts" of equal importance to industry.

Again, after years of research, *American* invented a practical process (patented) for making a quality steel shot in the commercial range of sizes used in blast cleaning.

Years of field experience taught us that a cast steel shot, when properly made and heat treated, has no superior for blast cleaning economy and efficiency. Our studies also emphasized the importance of absolute control over every step in manufacturing in order to produce a uniform, high quality steel shot.

To provide this quality product for our customers, *American* has now become the first and only manufacturer of blast equipment to build and operate its own shot producing plant, employing the finest equipment, methods and controls.

The name "Wheelabrator", proudly applied to this new steel shot is *American's* assurance that you can use this abrasive with confidence in achieving improved performance and economy. Try it soon.

Send for Bulletin No. 89

Bulletin 89 tells the complete story about "Wheelabrator" Steel Shot and what it means to the user in terms of performance and economy. Write for your copy today.

THE AMERICAN MOLDER

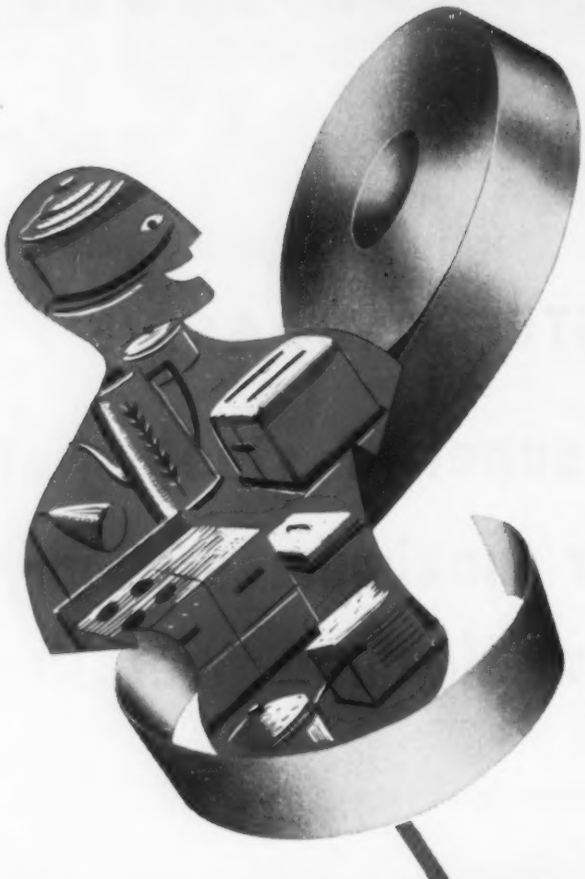
American

WHEELABRATOR & EQUIPMENT CORP.

505 S. Byrkit St., Mishawaka, Indiana

E ILDERS OF AIRLESS BLAST EQUIPMENT

COLD ROLLED STRIP



TAILOR-MADE FOR YOU BY FOLLANSBEE

Follansbee is a flexible, compact organization of steel *specialists.* That's why it is one of the companies best able to offer special, personalized attention to the needs of Cold Rolled Strip buyers.

Follansbee Cold Rolled Strip is rolled and tempered to your specifications—a custom-made quality strip that fulfills most manufacturing needs.

Follansbee Custom Quality and Custom Service means *real* production efficiency and time-saving economy in your forming operations.

Assure yourself a continuous supply of uniform strip from coils, delivered directly from the Follansbee mills to your automatics. A trained Follansbee Steel representative is as near as your telephone. Call him today. He'll gladly discuss your strip steel fabricating requirements with you.

FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES, PITTSBURGH 30, PA.

COLD ROLLED STRIP **SEAMLESS TERNE ROLL ROOFING**
POLISHED BLUE SHEETS AND COILS

Sales Offices—Chicago, Cleveland, Detroit, Indianapolis, Kansas City, Los Angeles, Milwaukee, Nashville, New York, Philadelphia, Rochester, San Francisco, Seattle; Toronto and Montreal, Canada.
Mills—Follansbee, W.Va.

FOLLANSBEE METAL WAREHOUSES
Pittsburgh, Pa. **Rochester, N.Y.** **Fairfield, Conn.**

—New Equipment—

Continued

Centrifugal pumps

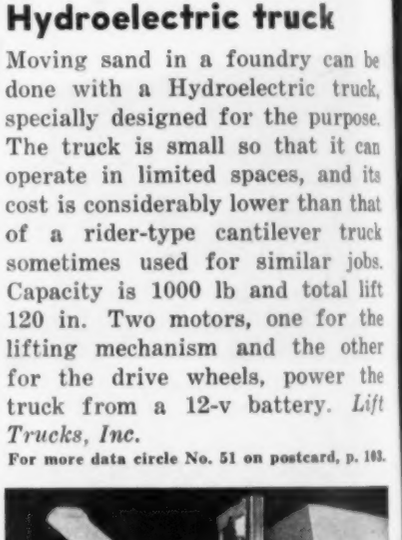
Three models of centrifugal pumps for pumping most liquids not too viscous or corrosive for modern corrosion-resistant alloys have been developed for continuous and intermittent service. Each model is made in sizes from 1/20 to 5 hp, with larger sizes rated at up to 148 gpm at free flow and 9 gpm at 124.7 ft of head based on water at 60°F. They have no pump bearings, seals or other moving metal-to-metal parts to wear which makes them suitable for liquids highly polluted with abrasives, chips and other entrained solids. *Detroit Harvester Co.*

For more data circle No. 50 on postcard, p. 103.

Hydroelectric truck

Moving sand in a foundry can be done with a Hydroelectric truck, specially designed for the purpose. The truck is small so that it can operate in limited spaces, and its cost is considerably lower than that of a rider-type cantilever truck sometimes used for similar jobs. Capacity is 1000 lb and total lift 120 in. Two motors, one for the lifting mechanism and the other for the drive wheels, power the truck from a 12-v battery. *Lift Trucks, Inc.*

For more data circle No. 51 on postcard, p. 103.



The Iron Age

INTRODUCES

H. H. **Morgan**, promoted to president, ROBERT W. HUNT CO., ENGINEERS, Chicago; and **W. J Bongard**, becomes vice-president.

Calvin A. **Burton**, appointed assistant to the president, LAMSON CORP., Syracuse, New York; **Edward H. Woodberry** becomes conveyer sales manager; and **Gail D. Beaver**, named product sales manager.

R. **Wolcott Hooker**, elected vice-president and also given broader responsibility with respect to overall management, HOOKER ELECTROCHEMICAL CO.

Lewis D. Reiff, promoted to vice-president in charge of Steel Foundry Operations, SUPERIOR STEEL & MALLEABLE CASTINGS CO., Benton Harbor, Mich.; and **P. Richmond Schilling**, promoted to vice-president in charge of Malleable Foundry Operations.

Herbert A. Gumz, appointed executive vice-president, WEBSTER-CHICAGO CORP., Chicago; and **Norman C. Owen**, named vice-president in charge of sales.

Kenneth J. Humberstone, named a vice-president, THE AMERICAN TANK & FABRICATING CO., Cleveland; and **George F. Franck**, also made a vice-president.

Harold E. Rowen, vice-president and general manager, will assume the additional responsibility of directing the sales of the Metallurgical Div., SINTERING MACHINERY CORP., Netcong, N. J.

A. D. **Sullivan**, made vice-president in charge of engineering, BRUNNER MFG. CO., Utica, N. Y.

Robert E. Gentz, appointed director of management development at Indiana Harbor Works, INLAND STEEL CO.; and **Curtis W. Burr**, appointed assistant manager of sales, Plate & Shape Div.

Hugh L. Ruffner, elected vice-president, COLUMBIA IRON & METAL CO., Cleveland.

C. G. **Wallis**, becomes assistant to the vice-president, Headquarters Mfg. Div., WESTINGHOUSE ELECTRIC CORP.

Dr. Elmer H. Schulz, promoted to director of research, Armour Research Foundation, ILLINOIS INSTITUTE OF TECHNOLOGY; and **Dr. Maurice J. Day**, elected assistant director for program development.

Myron S. Curtis, elected engineering vice-president, WARNER & SWASEY CO., Cleveland.

J. W. Ruff, appointed director of purchases, AMERICAN BLOWER CORP., Detroit. He succeeds **R. S. Reade**, who has been made director, American Radiator & Standard Sanitary Corp., the parent organization.

Jim Davison, named director of sales and service, CLINTON MACHINE CO., Maquoketa, Iowa; **Clete Erlacher**, promoted to sales manager; and **Ray Oehler**, becomes service manager.

W. B. **McMillan**, becomes director, WAGNER ELECTRIC CORP., St. Louis.

William P. Snyder, III, elected to the board of directors, PITTSBURGH & LAKE ERIE RAILROAD CO.

Charles W. Weiler, Jr., named assistant secretary, AINSWORTH MFG. CORP., Detroit.

James R. Cummings, made director of engineering and sales, STAMCO, INC.

Edwin C. Evans, elected a member of board of directors, BEHR-MANNING CORP., Troy, N. Y.

James D. Elgin, appointed director of advertising and sales promotion, NATIONAL GYPSUM CO., Buffalo.

RUSSEL B. CAPLES, elected president and director, Anaconda Aluminum Co., New York.

THEODORE W. HAGER, named president, Peter A. Frasse & Co., Inc., New York.

L. G. PORTER, becomes administrative vice-president and treasurer, Borg-Warner Corp., Chicago.

Personnel

Continued

George W. Drysdale, elected to the board of directors, BRIGGS MFG. CO., Detroit.

Ellis J. O'Brien, appointed chief development engineer, HEYL & PATTERSON, INC., Pittsburgh.

Thomas A. Downie, appointed sales engineer, northern Pennsylvania territory, WM. K. STAMETS CO., Pittsburgh.

Les A. Shea, general sales manager, LINDBERG ENGINEERING CO., has returned to head the expansion plans and moving of the Air Hydraulics Div. to a new location.

A. Maclean Thornhill, becomes comptroller, S. G. KEYWELL CO., INC., Detroit.

R. B. Waters, appointed sales engineer in Ohio, THOMPSON & CO., Oakmont, Pa.

William M. Campbell, appointed manager, Peoria, Il., division, HYSTER CO.; and **Ronald B. Bengston,** becomes office manager, Peoria.

Burton R. Buck, appointed works manager, ELECTRO METALLURGICAL CO., a division of Union Carbide and Carbon Corp., New York.

James E. Castle, becomes manager, Lithium Mining & Milling Div., FOOTE MINERAL CO., Kings Mountain. N. C.

Richard H. Oberholtzer has been appointed manager, Milwaukee district, KENNAMETAL, INC.

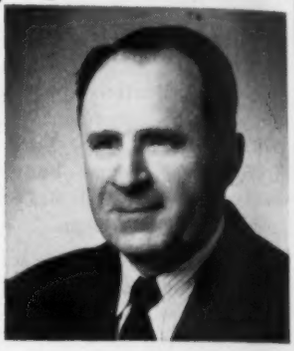
John P. Kelley, named works manager, Boston Works, ALLIS-CHALMERS MFG. CO., Milwaukee; and **Joseph L. Desmond,** appointed superintendent of production.

Danield S. Lisberger, named manager of manufacturing; Appliance Control Dept., GENERAL ELECTRIC CO.; and **J. Russell Mudge** becomes manager of finance.

M. J. Quirk, appointed accounts sales manager, FRUEHAUF TRAILER CO., New York.

Harry F. Devens, appointed assistant sales manager, East Alton, Ill., healquarters, Metals Div., OLIN INDUSTRIES, INC.; and **Edward W. Sherman,** appointed assistant sales manager, New Haven, Conn., headquarters.

W. A. MORRIS, JR., named vice-president-Purchases, Jones & Laughlin Steel Corp.



G. W. LINKHAUER, appointed vice-president-Operations, Pittsburgh Engineering & Machine Co.

HARRY E. BEANE, appointed vice-president of sales, The Bristol Co.

WILLIAM H. ROBERTS, elected vice-president and secretary, Detroit Stamping Co., Detroit.

SEND FOR 248-PAGE
WILMOT CHAIN & CONVEYOR Catalog
W
WILMOT
As Originators of Rivetless Chain, Wilmot Offers Widest Choice of Chain Sizes and Conveyor Attachments
Catalog 513 is a standard reference on rivetless chain for all applications. Lists the largest available choice of chain sizes and attachments; also every type of part for conveyors and elevators.
Investigate Wilmot DUCTILE IRON Castings - Bulletin 512
Chains
WILMOT ENGINEERING CO.
HAZLETON, PA.
Foundry and Shops: WHITE HAVEN, PA.

UDYLITE FULL AUTOMATIC CROSSES OFF REJECTS . . .

at the Dura Company of Toledo!

"Thousands and thousands of window regulators for automobiles go through the Dura Company Zinc Plating installation. Our Udylite Full Automatic practically eliminates rejects."

But that's only part of the Dura Company story. With their Udylite Full Automatic they get high production runs, too. This means a quality product at rock-bottom cost. It's easy to see that Udylite equipment is paying off for this modern, progressive company.

Why not bring YOUR plating problem to Udylite. Let us show you how Udylite equipment, research and supplies can give YOU top results. Call your Udylite technical man today or write direct. There's no obligation. THE UDYLITE CORPORATION, DETROIT 11, MICH.

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THE Udylite CORPORATION
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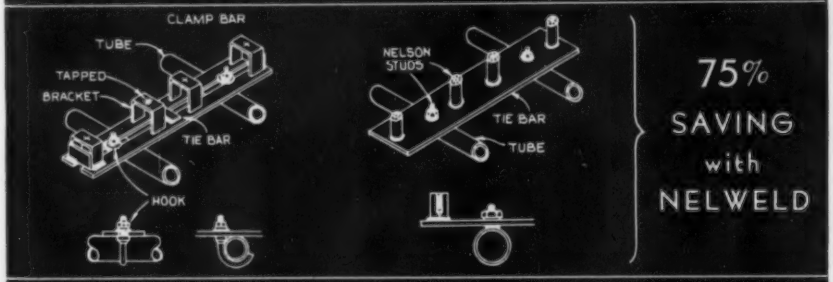
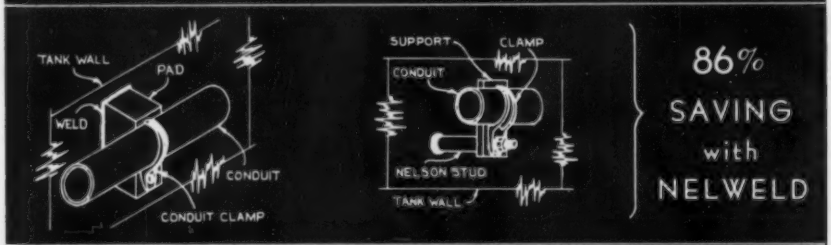
71% to 86% Savings by redesigning with NELWELD*

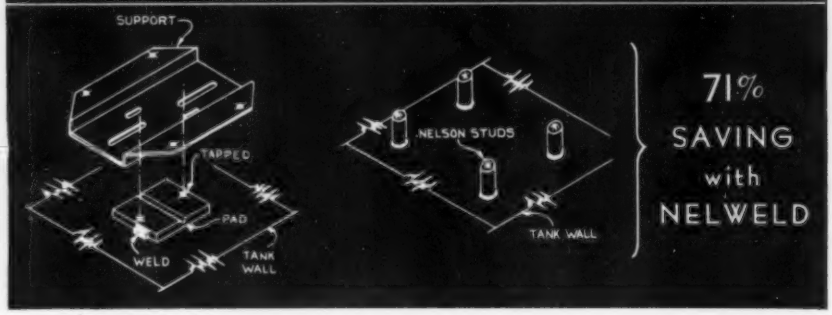
FORMER METHOD · NELWELD METHOD · RESULT



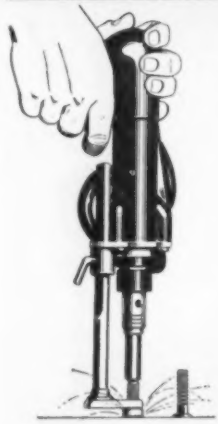
75% SAVING with NELWELD



86% SAVING with NELWELD



71% SAVING with NELWELD



These substantial savings in fabrication costs were obtained when an electrical equipment manufacturer took advantage of the NELWELD method of fastening to redesign component parts. If you are now drilling/tapping or hand welding, chances are you too can . . .

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NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO

—Personnel—

Continued

William Rodgers, named general sales manager, BLAW-KNOX CO., Pittsburgh.

Albert H. Clem, appointed general sales manager, PENNSYLVANIA SALT MFG. CO., Philadelphia. He succeeds the late Russell S. Roeller.

Ralph E. Hoover, becomes manager, INLAND STEEL CONTAINER CO., subsidiary of Inland Steel Co. container plant in New Orleans.

Walter J. Holder, becomes assistant to the general sales manager, HONAN-CRANE, Lebanon, Ind., a subsidiary of Houdaille-Hershey Corp.

L. R. Fletcher, appointed sales manager, Welding Steels Div., PYRAMID STEEL CO., Cleveland.

C. Harold Johnson, joins Cleveland office, THE PENINSULAR GRINDING WHEEL SALES CORP.

Craig C. Carpenter, promoted to assistant general sales manager, SOULÉ STEEL CO., San Francisco.

Walter Lohman, named manager, Material Control Div., HEIL CO., Milwaukee.

Otto Schmidt, appointed Midwestern drill unit sales representative, The Delta Power Tool Div., ROCKWELL MFG. CO., Pittsburgh.

Jerome J. Theobald, appointed sales representative, GRIES REPRODUCER CORP., New York.

OBITUARIES

William B. McSkimmon, 81, a founder and former president, Union Twist Drill Co., Athol, Mass., recently in Boston.

George R. Prout, 53, a vice-president, General Electric Co., Schenectady.

Rudolf Nagel, 63, chief engineer, Heavy Materials Handling Div., Heyl & Patterson, Inc., after a short illness.

Clyde S. Bergert, 62, manager of the Shelving Sales Dept., Berger Mfg. Div. of Republic Steel Corp., Canton, Ohio, recently.

Robert H. Gardner, 58, general sales manager, A. M. Byers Co., Pittsburgh, recently in Allegheny General Hospital, after a brief illness.

Anthony Siragusa, 53, purchasing agent, nonferrous metals, U. S. Steel Corp., recently.

The Iron Age
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Technical Articles

From Single Units to MASS PRODUCTION IN ONE BIG MOVE

- Output of jet engine parts was increased three to four times, using the same space formerly operated at capacity.
- Changeover took 9 months . . . Conveyer lines were installed, special machines designed and built and standard machine tools moved.
- New machines paid off . . . Savings in time, money and space are substantial . . . Requirements for skilled labor are much lower.

By B. A. Willsey
Manager of Manufacturing
Solar Aircraft Co.
San Diego, Cal.

◆ HOW TO EXPAND a plant without adding a single square foot to factory space is being demonstrated by Solar Aircraft Co., San Diego, Calif. The output of "hot parts" for jet engines has been tripled or quadrupled in buildings which theoretically were operated at capacity. Mass production practices synonymous with Detroit were adopted in place of the one-at-a-time methods of traditional machine shops.

Before Solar shifted to high production machinery and conveyerized lines, General Electric J47 combustion chambers and transition liners were turned out at a value rate of $15.35 per sq ft of factory space a month. Today, the output value rate is almost three times as high —$44.70 per sq ft a month. Even at this high rate of production, a value rate of $66.50 could be achieved if conveyer facilities are used to capacity.

The changeover involved five basic aspects of production: (1) shifting of segregated operations to conveyerized mass production lines, (2) equipping each unit with special fixtures and designing for automatic or semiautomatic control through a complicated sequence of operations, (3) installation of standard high production machine tools where needed to boost output, (4) designing and installing high production welding machines, and (5) using labor and plant layout to the best advantage for increased efficiency.

A major factor affecting production was the critical shortages of skilled labor in the area. Executives reasoned that outbidding other companies for the available skilled labor would not solve any problem—it only creates more. One solution to the problem was to train men to be skilled specialists. There was no time to train persons in all-around skills since the jet construction program would not sustain leisurely training.

Manufacturing methods were changed to em-

"Successful mass production is due largely to new techniques and machines . . ."

brace jobs as simple and specialized as possible. Men and women were trained to fill these jobs. Attempts to hire skilled persons were practically abandoned. Last year, Solar trained thousands of persons, mostly in the lesser skills such as metal fitting and assembling. About 400 or more persons were trained as machinists, fusion welders, spotwelders and in similar semi-skilled crafts. Most training is on the job but classroom work is given in certain types of training.

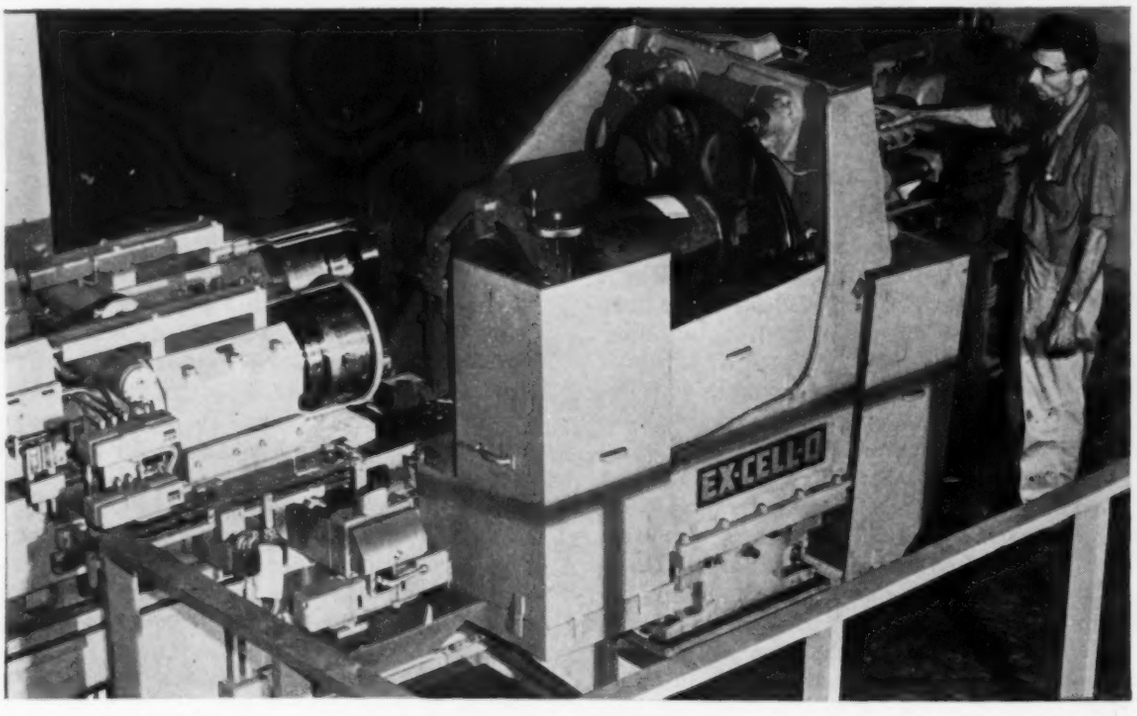
Training for mass production operations is fast and highly specialized, yet thorough. It must be because jet components have high dollar value and one mistake can spoil a part worth hundreds of dollars. The assumption is that even after training, the operator is still inexperienced. For this reason, locks have been installed on some machines to prevent their operation until they have been properly adjusted.

Successful mass production of jet parts is due in large measure to the introduction of new techniques and machines. A new 19-ton transfer boring and facing machine, costing $90,000 is the only one of its type in the world. It has slashed 87 pct off the time previously required to do all internal machining on J47 jet engine aft frames. This two-station, three-head unit replaces three large vertical turret lathes. It also does a better job. Aft frames, consisting of many diameters which are closely concentric, must be machined to close tolerances. Single chucking of the new unit against three chuckings previously required is also an obvious advantage.

This new machine automatically moves the aft frames, which are alloy steel weldments weighing 185 lb and almost 4 ft long, from the first to the second station. At the same time, its three machining heads work in precise cycles to bore, counterbore, face and chamfer various surfaces. The complete time cycle is 30 min or about 13 pct the previous time requirement. A big advantage is that this machine occupies 70 pct less space than is needed for boring mills to do the same job.

Another special-purpose unit is an eyelet finishing machine designed by Solar. This machine finish bores and faces eight eyelets of the aft frame in four indexes, two at a time. It has one machining head on each side of the machine. These heads, working simultaneously, automatically finish bore, face, turn the diameter, chamfer and undercut the back of the flange on the aft frame in 75 min. Previously, this work was done on radial drill presses with pot fixtures underneath which had to be indexed around the eyelets. Each eyelet had to be dialed in with a dial indicator. Total time for the operation was 150 min.

For some jobs, Solar has designed special-



NEW 19-TON BORING AND FACING MACHINE is the only one of its kind. It cost $90,000 but chopped 87 pct off the time to do all internal machining on J47 jet aft frames. The operator needs only to push a button to start the unit through its complex cycle. This unit replaces three large vertical turret lathes.

purpose tools which cost less than standard machine tools. One such machine drills 80 holes of 9/32-in. diam in the outer flange of a jet engine exhaust cone assembly. It has four Kingsbury heads mounted vertically at 90° intervals, drilling four holes during each of 20 cycles. Indexing is done by hand.

Compressed air is used with the coolant to force it against the metal being drilled. The entire unit is enclosed in a housing with access doors for changing drills and removing heads when necessary. It eliminates the need for a multiple-spindle drill that would have cost $15,000 and required a year for delivery. It also saves floor space, and because it is loaded directly by an overhead crane, no complicated positioning is necessary.

Many other special-purpose units are in use throughout the plant. Standard high production machines also play an important and extensive role in the new program. One 36-spindle Natco drilling unit drills 72 holes of three different diameters in an aft frame. Including one index, the operating time is 18 min as opposed to 2 hr formerly required with a radial drill press. One 40-spindle Baush drilling unit makes 80 holes in the large flange of an exhaust cone; another does the same on an aft frame. In both cases, time was reduced from 1 hr to 20 min. In another instance, a 24-spindle Natco drills 24 holes in the flange of a small exhaust cone, doing the work in 15 min instead of 52 min.

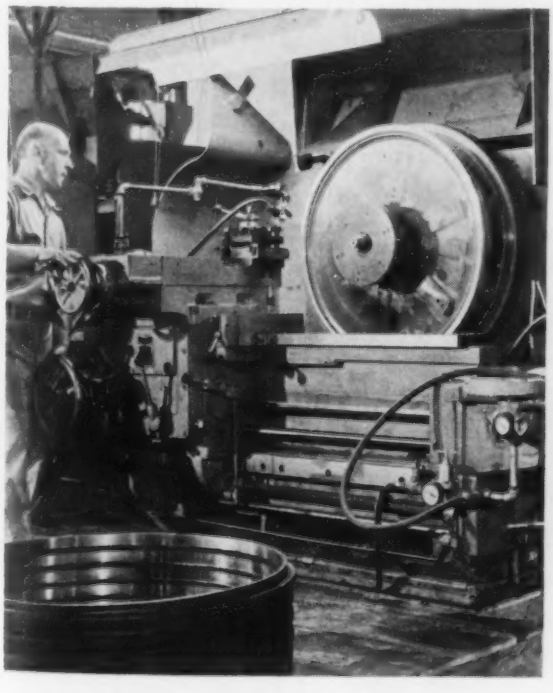
Besides multiple-spindle drilling, automatic chucking machines and new types of lathes are used extensively. Automatic chucking machines are used to produce small flanges formerly made on hand-operated turret lathes which required skilled operators. Now, unskilled operators turn out better quality products in greater quantities. One part made on a turret lathe in 50 min is now made on the chucking machine in 14 min.

In another case, Lodge & Shipley T-lathes replaced vertical boring mills. A 36-in. diam flange which required 283 min to machine on a vertical turret lathe is now machined on the T-lathe in 161 min, a saving of more than 2 hr on each part.

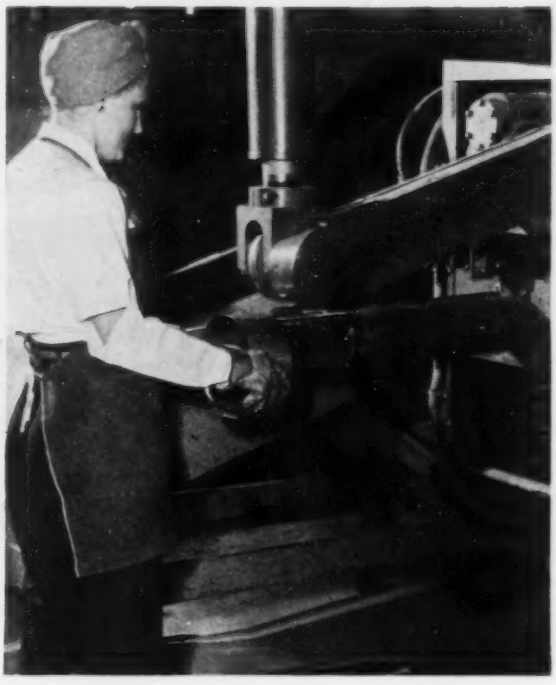
By designing much of its welding equipment

WHY CHANGE TO AN ASSEMBLY LINE?

1. An increase in quantity requirements makes mass production methods possible.
2. Design changes have simmered down to where they no longer hamper production.
3. An assembly line is more economical.
4. Training of unskilled persons, recruited because of a shortage of skilled labor, is easier in a mass production setup.
5. Factory space, being at a premium, makes higher production without increasing area desirable.
6. Standard machine tools are scarce. To design and build a special machine is sometimes easier and cheaper than obtaining standard tools.
7. To produce and sell at lower unit cost.



T-LATHES REPLACED BORING MILLS for machining 36-in. diam flanges. This lathe requires less floor space and saves 2 hr on each part over former methods.



SEAM LEVELING MACHINE increases tensile strength of stainless steel welded parts. Weld passes through hardened steel rolls under a pressure of 55,000 psi.

"The change involved moving and installing 1500 pieces of equipment during a 9-month period . . ."

and modifying standard welding techniques, Solar boosted output substantially. In one case, an automatic inert-arcwelder was designed to make a 92-in. circumferential weld. Originally, welding was done manually, each weld requiring 45 min. The new machine cut the time of each weld to 6 2/3 min and of the complete cycle (loading, fitting, welding and unloading) from 1 hr to 23 min per part.

Another example is that of a modified roll welder for making 3-in. diam seam welds around reinforcing patches on fuel manifolds of jet engine exhaust cones. Single spotwelds were previously used, requiring about 4 hr for each cone. The modified machine does the job in 45 min per cone. To do this work, seven spotwelders, costing $49,000, would be needed. The new unit does the same work and cost only $14,000.

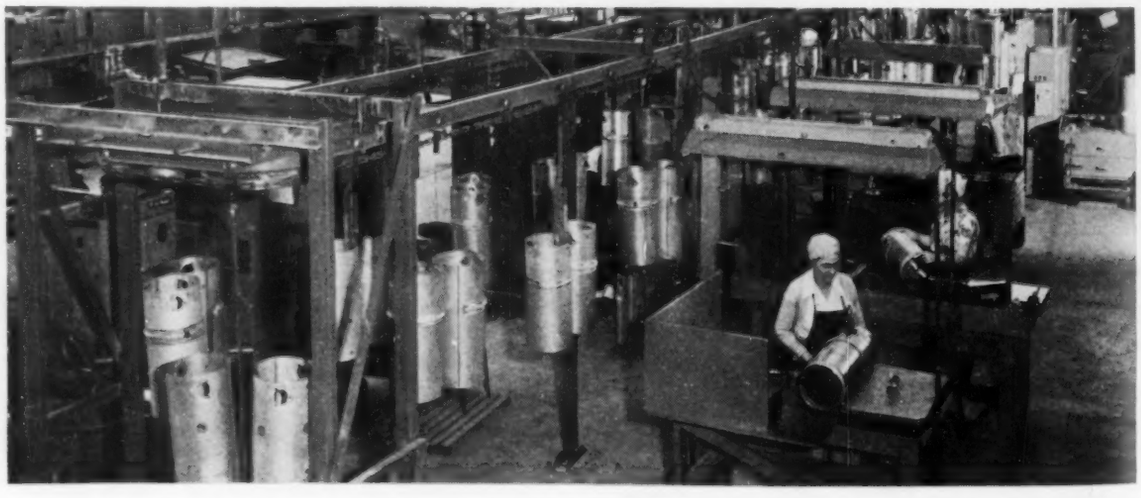
NIBBLER, for trimming edges of complicated shapes, is one of special tools designed and built by Solar.

All of the special and standard machines have been integrated into production lines to mass produce the "hot parts" for jet engines. On inner and outer combustion chambers and transition liners, conveyerized lines help minimize handling and moving costs, decrease storage problems and reduce the quantity of parts and materials in process. Operations on these lines include forming and piercing on presses assigned for specific tasks, arcwelding, spotwelding, roll welding, pressure testing, deburring, cleanup and other allied jobs.

Each conveyer line moves at a predetermined rate with work stations spaced according to the time required for the operation. An inner combustion chamber can be turned out every 2½ min; a transition liner, every 3½ min; and an outer combustion chamber, every 5 min.

Production lines are also set up for aft frames and exhaust cones, but they are not mechanized. Instead, they rely on roller conveyers. Operations along these lines include Heliarc welding, metal-arcwelding, spotwelding, roll welding, machining, drilling, tapping and deburring. Some special-purpose machines are also included. The last two stations in each line are for final inspection and boxing for shipment.

The change from former to present methods involved a great deal of rearrangement. All told, 1500 pieces of equipment and machinery were moved and installed in three buildings over a 9-month period. Each move was made with two major considerations: (1) sequence of operations which required space to be cleared before a new machine was moved in, and (2) production schedules, so that work interruptions were as few as possible. Layout control methods of mass production industries were used in the entire project.



MECHANIZED CONVEYERS were installed to increase the production of "hot parts" for jet engines. Fnished parts are carried from production lines by this conveyer at the rate of one part every 2½ min.

Hydrogen not guilty—

Segregation:

Major Cause of Flakes in Alloy Gun Steels

By J. B. Gero
Research Engineer
Bethlehem Steel Co.
Bethlehem, Pa.

A. R. Troiano
Professor
Dept. of Metallurgy
Case Institute of Technology
Cleveland.

◆ Guns set aside during War II have now been studied . . . Flaking in 4340 blooms is direct result of dentritic segregation.

◆ Heat treating cycles must be long to overcome transformation times of heavily alloyed "spots" . . . Hydrogen theories are discounted.

◆ HIGH-ALLOY STEEL rejected because of flaking during World War II was a factor in limiting the production of Ordnance materials. Because of the accelerated production schedules extensive research was impossible at that time. Sections of strategically selected blooms and forgings were set aside for future study and reference. Test results have now been completed which show that flaking is most probably a direct result of dendritic segregation.

The literature on flaking is voluminous but inconclusive. The plausible theories advanced to date on the cause of flaking are summarized in Table I. The conclusions of this investigation are shown in Table II.

The blooms and forgings tested were from two basic electric furnace heats of SAE 4340 containing 0.08 pct V cast into 34 x 34-in. hot-top ingots weighing 33,000 lb. These ingots were rolled to 24-in. sq blooms. After rolling, the blooms were cooled to room temperature according to one of several cooling cycles, Fig. 1, which were specifically designed to prevent the formation of flakes.

The cropped blooms, 24 x 24 in. which now weighed 17,000 lb were then forged into tapered rounds and cooled to room temperature using one of several cooling cycles, see Fig. 1, after which the forged rounds were rough machined and heat treated.

The average reduction in area from the ingot to the forging was 3 to 1 and the larger end of the forging corresponded in position to the upper end of the original ingot. Transverse slices 1 in. thick were removed from the ends of the rough-machined forgings, macroetched and checked for flakes and soundness as shown in Fig. 2. Flakes observed at any stage in the production of these materials were sufficient cause to reject any bloom or forging.

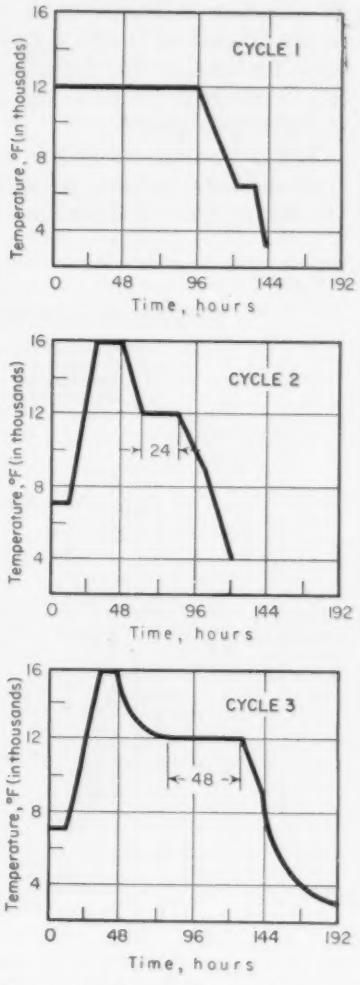


FIG. 1—The three cycles used to prevent flaking did not produce flake-free blooms.

"Materials were obtained from a bloom and gun set aside during the war . . ."

Observations made during the production of these sections by the producer disclosed the following facts: (1) Flakes, when found after forging and cooling, were preferentially located at two positions in the "A" slices; (a) a cylindrical zone midway between the periphery and the center and (b) at the center. The "I" slices flaked at center positions only and the "M" slices usually did not flake. The locations of these slices are shown in Fig. 2. (2) Examination of macroetched slices revealed the presence of black "spots" in the flaked zones. Flakes usually emanated from these "spots" but not all "spots" exhibited flakes. (3) Metallographic examination of "spots" indicated the presence of an acicular, light etching constituent in a pearlite matrix. (4) Spectrographic analyses revealed the "spots" to be high in alloy content. (5) Edge-to-center chemical analyses did not indicate the presence of any appreciable macrosegregation. (6) Porosity existed in the lower portion of the ingots. (7) Neither flakes nor black "spots" were found in the product of the 25 x 25-in. 12,100-lb ingots used for smaller forgings, when cooled according to the same cycles as the larger blooms from the 33,000-lb ingots.

The following materials were also obtained from a bloom and gun set aside during the war for the purpose of determining the variation in time for completion of transformation at 1200°F from edge-to-center throughout a bloom and forging.

Blooms of Heat V-31059, cooled in conformity with Cycle 1 after rolling, flaked after forging when cooled according to Cycle 2. The forged and rough-machined gun of Bloom 4 was sectioned and the "A," "I" and "M" slices 1 in. thick together with the "T" and "B" bloom slices, see Fig. 2, were procured for edge-to-center transformation studies.

Blooms from another Heat, V-31144, were tested. Blooms 2, 3, and 4, cooled through Cycle 1 after rolling, did not flake when cooled through Cycle 3 after forging. Bloom 1, cooled through Cycle 1, was set aside for sectioning and Slices 1, 2, 3, 4 and 5 were also submitted for edge-to-center studies as shown in Fig. 2.

All specimens austenitized

To study the edge-to-center transformation characteristics of the above bloom and forging, specimens were removed at 1-in. intervals from edge-to-center from each of the transverse macroetch test slices.

All specimens were austenitized at 1900°F for 20 min in an atmosphere of purified nitrogen quenched to 1200°F and held for various predetermined times before quenching to room temperature. The samples were polished on a surface parallel to the longitudinal axis of the original section and etched with 2 pct nital. Following this, metallographic examinations for determining the end of transformation were carried out at 80X under oblique light.

Certain trends are evident from transformation data on the bloom and forging shown in Figs. 3 and 4. The times for completion of transformation increase from the edge to a depth of about 4 in. in all sections throughout the bloom and forging. However, at a depth of 4 in. a discontinuity or break in transformation times occurs in all sections. Above the hot-top collar of the bloom, there is a sharp drop in transformation times to below 20 hr at the center, see Fig. 4, Slice 1. However, for slices immediately below the hot-top collar there is a tendency for the transformation times to dip slightly between 20 and 24 hr, see Fig. 3, "T" Bloom Slice and Fig. 4, Slice 2 and "T" Bloom Slice. For the "A" Slice,

TABLE I

THEORIES FOR FLAKING

1. Transformation-stress theory[1]
2. Hydrogen theory[2, 3, 4]
   - A. Embrittlement[7, 8, 9, 10, 11]
   - B. Occlusion[5, 6]
3. Combination of (1) and (2)

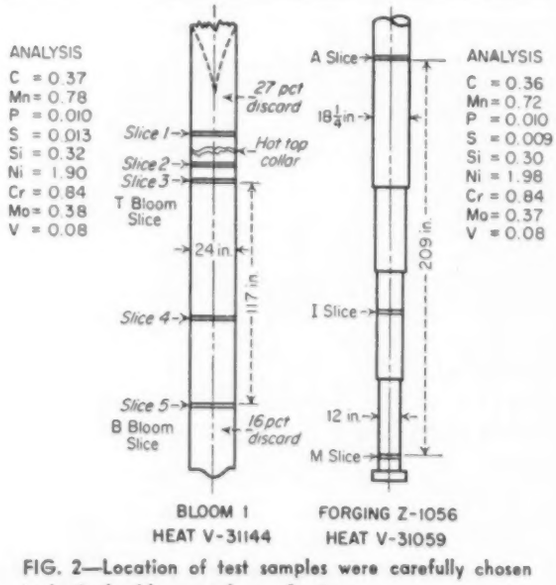


FIG. 2—Location of test samples were carefully chosen in both the bloom and gun forgings.

TABLE II

WHY THESE GUN FORGINGS FLAKED

1. Flaking, in these large sections of modified SAE 4340 steel, is the direct result of dendritic segregation.
2. Alloying elements that show the greatest tendency to segregate appear to be the elements that have the greatest effect in retarding transformations in the pearlite range.
3. Heat-treating cycles designed for the prevention of flakes, in sections produced from large ingots, must take into account the long transformation times required for the segregated "spots".
4. Dendritic segregation is not a result of defective steelmaking but a natural-physical phenomenon of the solidification of alloy liquids, and may be lessened only by more rapid solidification.

see Fig. 3, the times dip sharply to below 20 hr at a depth of 7 in. and increases to over 32 hr at the center. In slices from the midsection of the bloom and forging, transformation times at the center are in excess of 40 hr, see Fig. 3 "I" Slice and Fig. 4, Slice 4.

The lower portions of the bloom and forging do not exhibit the excessively long times at the center but tend to level off.

A small induction heat was made to approximate the analysis of the "spots." Analysis of this heat was: 0.38 pct C, 0.67 pct Mn, 0.41 pct Si, 2.20 pct Ni, 0.97 pct Cr, 0.53 pct Mo and 0.14 pct V. Tests on this material showed several transformation characteristics relevant to the phenomenon of flaking. The time for completion of transformation at the pearlite nose for this composition was more than twice as long as that of the modified SAE 4340 and although the time for completion was not as long as for the "spots," it did indicate that dendritic segregation of alloying elements produced longer transformation times. Hence cooling cycles, designed to eliminate transformation stresses, to prevent the formation of flakes must consider these excessively long transformation times. As an example of

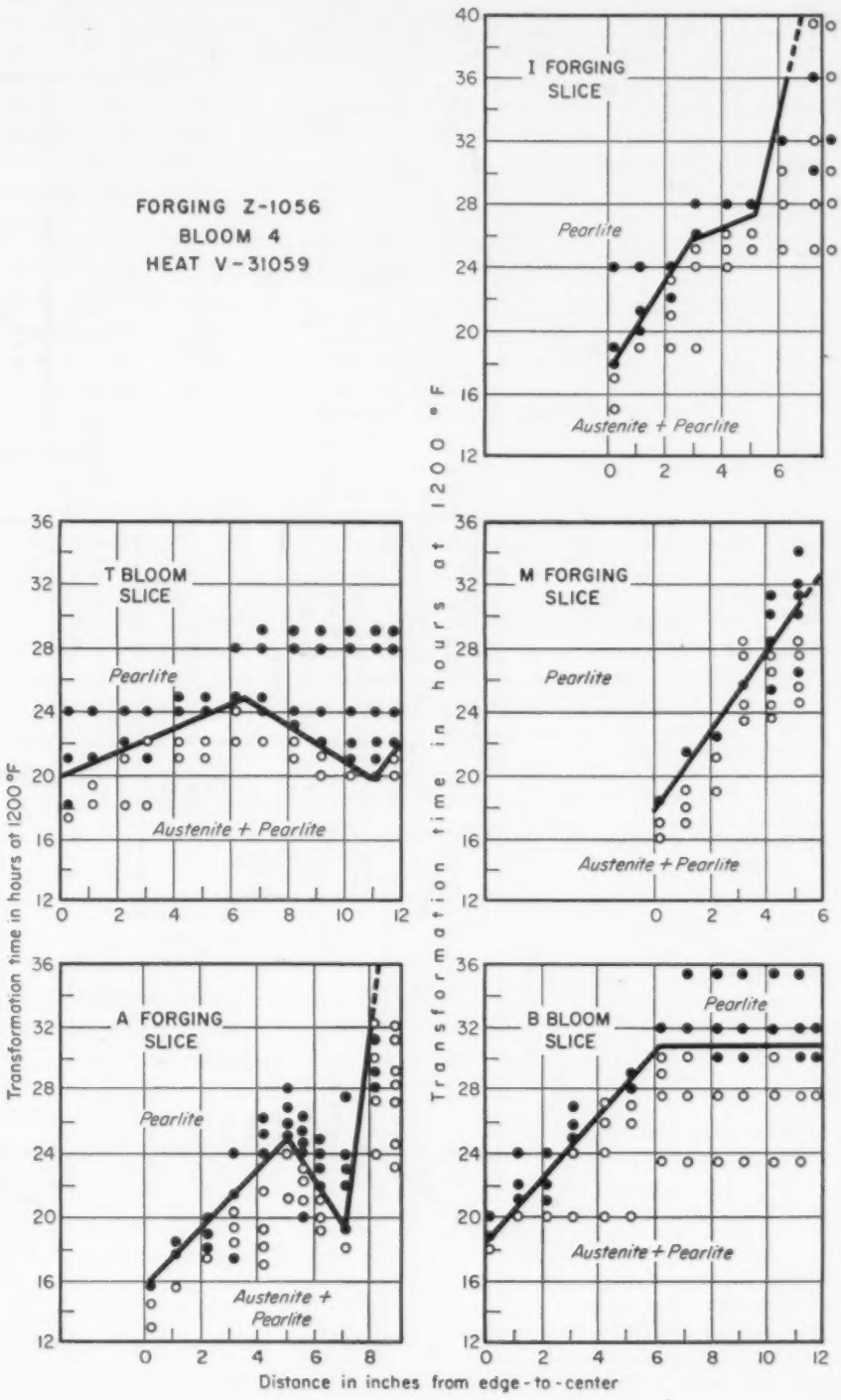


FIG. 3—Transformation product for various slices show difference caused by segregation for bloom 4 from heat V-31059, forging Z-1056.

"Longest transformation time for the hot-top slice is greater than for slices immediately below . . ."

this, compare the transformation characteristics of Heat V-31059, which flaked after holding 24 hr at 1200°F, with Heat V-31144 which was found to be flake-free after 48 hr at 1200°F.

These data reveal that the longest transformation time for the hot-top slice is greater than for those slices taken immediately below it; while decreases in time after the discontinuities, exist only in the hot-top and upper portions of the bloom. The maximum times for the bloom and gun section occur at the center of slices removed from midway between the top and bottom, e.g., slices "I" and 4. However, in slices from near the bottom, the transformation times do not increase to the exceedingly long times found in those taken from midway between the top and bottom of bloom and forging level off.

The austenite volumes requiring the long transformation times were found to correspond in position to the "spots" in slices taken from throughout the bloom and gun. Significantly, flakes emanated from these "spots."[12, 13, 14, 15]

The increase in the transformation time, from the edge to the point of discontinuity may be related to the columnar zone, and the point of

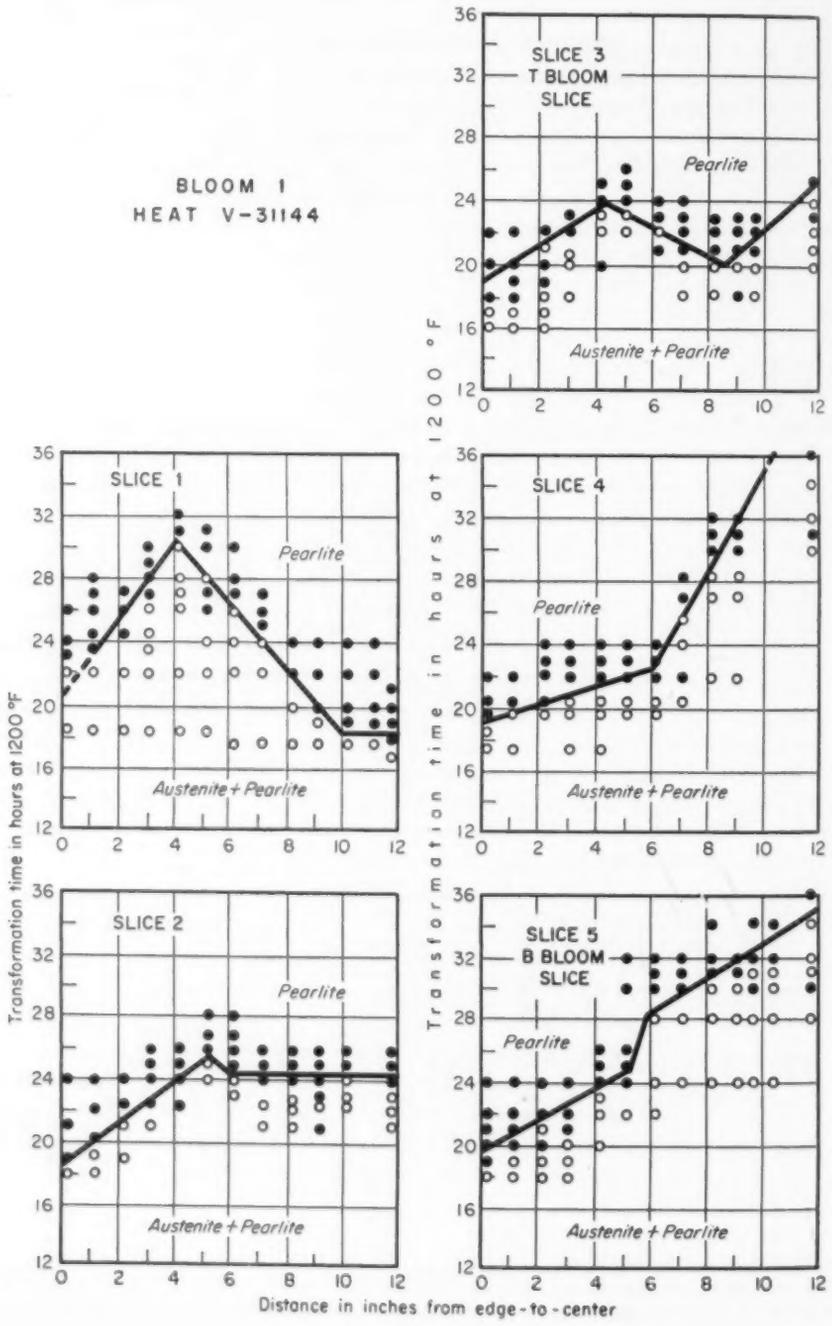


FIG. 4—Difference in transformation times to a given product can be seen in between bloom 1, heat V-31144 and the heat shown in Fig. 3.

discontinuity with the end of columnar crystallization. It has been shown that the rate of transverse freezing decreases with depth of solidification according to the formula $D = K\sqrt{t}$.[16, 17, 18] This indicates that the slower the rate of freezing the greater the degree of dendritic segregation and the longer the transformation time. The point of discontinuity where the rates of columnar and equiaxed crystallization change and the constant K of the above formula has been determined.[19]

The decrease in transformation time after the point of discontinuity found only in the hot-top and upper portions of the bloom may be associated with the so-called inverted "V" segregates. It has been postulated that these segregates are caused by the rise of enriched liquid before the advancing solid-liquid interface.[20, 21] It is difficult to reconcile this decrease in transformation time in a zone that solidified from an enriched liquid. Rather, it appears plausible to suggest that these segregates are due to the downward movement of cooler liquid from the hot-top during solidification in the ingot.

Maximum time was 30 hr

It is also difficult to reconcile the long transformation times encountered at the center of sections, removed midway between the top and bottom of the bloom and forging, with the concept of high alloy particles settling from the hot-top into the ingot during solidification. The maximum transformation time observed for the hot-top slice was 30 hr while at positions immediately below, the time did not exceed 25 hr. If the long transformation times found for slices from the center of the ingot were due to these particles, it would seem logical to assume that some would be entrapped immediately below the hot-top and thus cause long transformation times at these positions. It is equally difficult to attribute these long transformation times, at the center, to macrosegregation, since edge-to-center chemical analyses do not indicate its presence.[22]

Center portion a heat reservoir

After examination of an ingot modified SAE 4340 steel, of the same size and type as those used in producing the blooms and guns studied in this investigation, other investigators found only a slight indication of macrosegregation. In many cases, these high-alloy "spots" contained inclusions of the sulfide type.

It is conceivable then that the high-alloy "spots" requiring the excessively long transformation times, are the direct result of dendritic segregation also known as microsegregation. The great mass of molten metal in these ingots requires long solidification times which produces more favorable conditions for microsegregation particularly at the center of the ingot. This center portion behaves essentially as a heat reservoir.

Acknowledgment

The authors acknowledge the aid and suggestions of many of the staff members of Republic Steel Corp. under whose sponsorship this study was performed and to F. J. Shortsleeve who carried out the initial work on this investigation.

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No need to wait—

TEMPORARY TOOLING Breaks Production Bottleneck

By E. C. Beaudet
Machinery Editor

◆ Aircraft engine production schedules were threatened by unavoidable delays in machine tool deliveries . . . Here's how Ford Motor Co. resorted to temporary tooling until permanent equipment arrived.

◆ Groups of standard machines took the place of special machine tools . . . Production lines were gradually filled in with permanent tools . . . Delivery dates were met.

◆ AIR FORCE CONTRACTS for the manufacture of Pratt & Whitney "Wasp Major" engines at the huge government plant in Chicago were obtained by Ford Motor Co. in October 1950. Schedules called for the first shipment of engines to start in March 1952. The plant which was then being used as a government warehouse had to be rehabilitated, test cells revamped and a pilot line put in operation in 17 months.

Processing of some of the 2000 different parts going into the three types of engines produced had to start 9 months before the shipment date. Of the 6000 machine tools required more than 60 pct were obtained from government reserve pools. These had to be inspected and in many cases torn down and repaired before they were put into production.

More than 2100 new machine tools had to be ordered to meet production needs. Delays in delivery of machine tools were encountered because of the extremely long backlogs at that time and urgency ratings assigned to many Air Force programs.

To overcome this delay and get into production as quickly as possible Ford adopted temporary tooling methods. Groups of standard machine tools which were immediately available were used in place of special machine tools ordered for the job. Temporary tooling methods permitted Ford to produce engines but also created severe materials handling and routing problems as the machines were scattered throughout the plant and handled a wide variety of work. This has been overcome in the last 6 months by the delivery of all the necessary tools.

To set up temporary tooling, considerable ingenuity was required. No mention of the make of machine tools used is made because their use represents a misapplication of the equipment and does not illustrate to advantage the purpose for which they were built. However, a comparison between temporary and permanent tooling methods does illustrate what can be done with standard machine tools to build a product, and demonstrates the effectiveness of special machine tools engineered for a particular job.

In most cases more than one standard machine has been replaced by one special machine so that a direct comparison between the production rates of both methods is impossible to make by comparing machine against machine.

On the engine's collector case for example, a 3-ft x 9-in. radial drill, see Fig. 1, was used to drill each of the 58 stud holes in the rear face of the part. Two separate drilling fixtures were used and a depth stop was clamped to the drill to help maintain the required depth. Considerable care was taken in drilling the holes to maintain proper alignment.

With permanent tooling, all 58 holes are drilled at one time with the multi-spindle drilling machine shown in Fig. 1b. This machine automatically locates and drills all holes correctly and independently of the operator's technique. The time required to perform this operation was reduced 1600 pct with the addition of permanent tooling.

On the intermediate crankcase, a 7-way boring machine, Fig. 2b, bores, faces and chamfers seven half-holes in two operations. Temporary tooling employed a horizontal mill, Fig. 2, which bored the half-holes one at a time. With this equipment each piece was located 14 times.

The slightest deviation from the exact position could result in a rejected part. The special machine assures positive location and performs the operation on all seven holes at once. Its rigid and massive construction greatly aids the production of quality work. A direct comparison between the two pieces of equipment shows that the operating time was cut 8 to 1.

A number of serious problems were encoun-

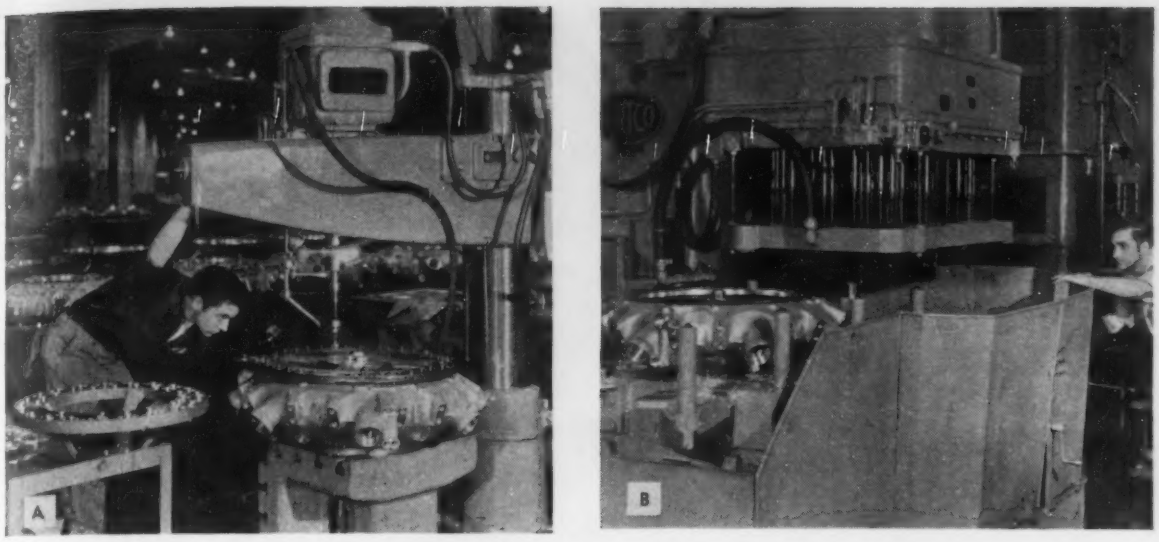


Fig. 1—Before (A) and after (B) methods of drilling holes in engine collector case.

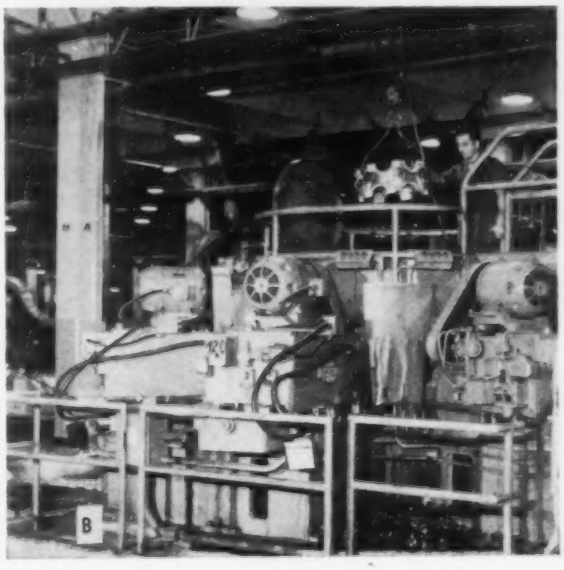
tered in the boring, facing and chamfering of 28 cylinder-barrel holes in the crankcase-bearing guide and assembly using temporary methods. With a standard horizontal mill, Fig. 3a, it was necessary to locate the piece 28 times. Extremely close tolerances required the utmost care to prevent misaligned and tapered holes. A 4-way, 7-index boring machine now used, see Fig. 3b, minimizes chances of error, reduces operating time to 1/32 of the former time and makes more possible the production of a dimensionally satisfactory part.

Due to delay in the delivery of a crankshaft turning lathe, it was necessary to grind the crankshaft journals and cheeks from the rough forging rather than turn them. Although the cylindrical grinder employed, Fig. 4a, required fewer operations, a greater length of time was required to complete the process. Over $\frac{3}{8}$ in. of stock had to be rough ground off each rough forging to obtain specified journal and cheek dimensions. The layout of each part prior to grinding took about 8 hr. Considerable skill was needed to prevent shaft burning and resultant grinding checks. With the center-drive crankshaft lathe, shown in Fig. 4b, the number of operations has been raised from 1 to 3 but processing time per piece has been reduced over 24 times. Less operator skill is demanded and scrap loss has decreased.

Ten pinion holes in the engine propeller shaft were to be drilled on a 10-spindle drill press ordered for the job. Since this machine was delayed, it was necessary to use the single-spindle machine shown in Fig. 5a. Additional handling and location was needed since three separate fixtures were required to perform the operation. This called for the operator to locate the drill in a manner which would eliminate excessive pressure and bushing wear.

The permanent machine, shown in Fig. 5b locates all ten holes positively and drills them in line. Subsequent boring operations are made

Fig. 2—Machining operations on intermediate crankcase section show temporary (A) and permanent (B) setups.



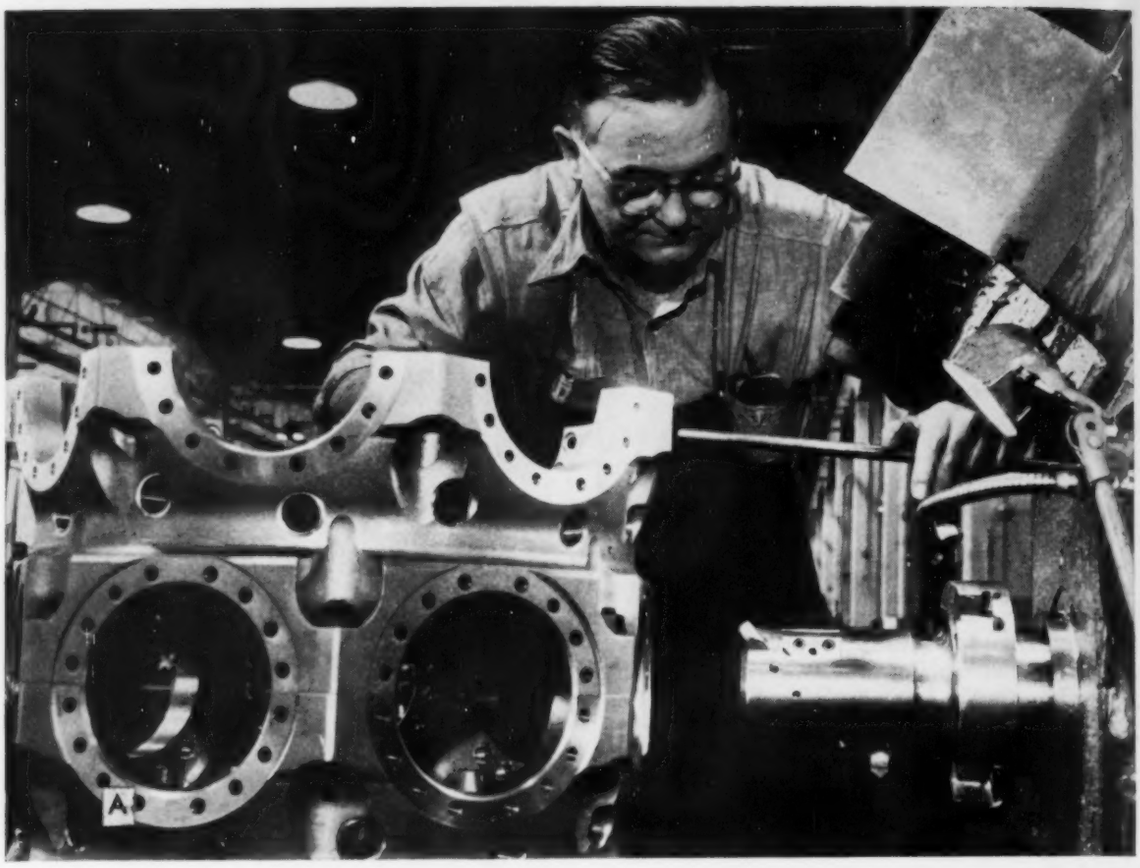
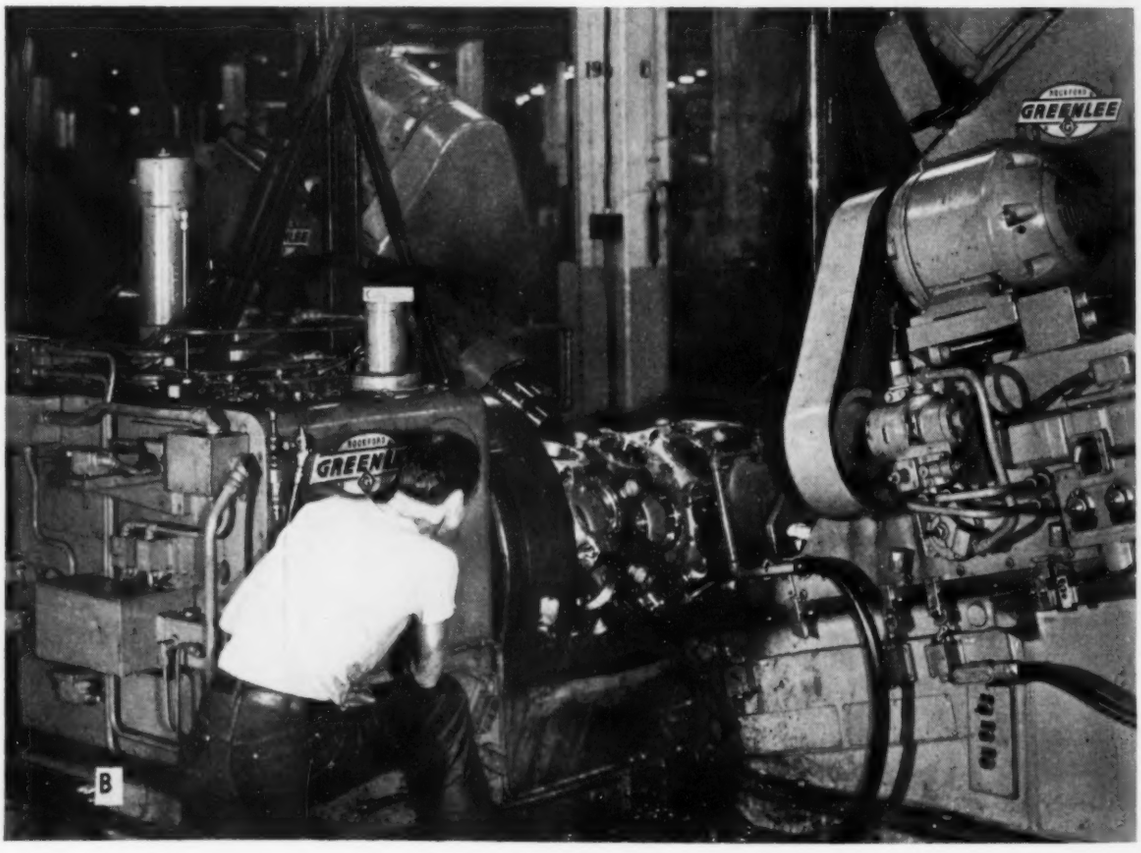


Fig. 3—Operation on crankcase bearing guide and assembly illustrates old (A) and new (B) installations.



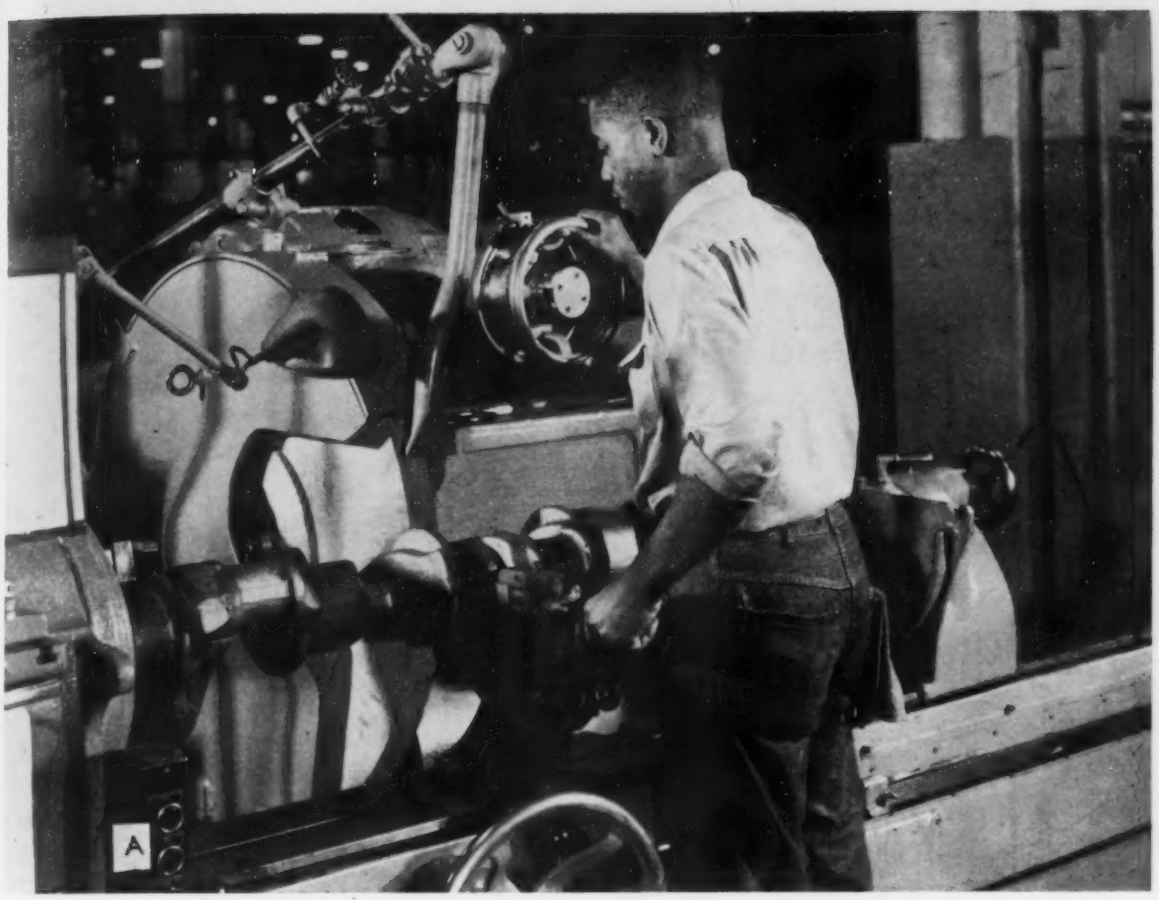


Fig. 4—Cylindrical grinder (A) was replaced by center-drive lathe (B) in turning crankshaft journals.

easier and higher quality is obtained. Operating time per unit has been reduced 1/10 the former time.

A single-spindle drill formerly took four operations to gun drill six deep holes in the rear accessory-drive case. A number of different tools had to be used with this temporary method and, as in all temporary drilling operations, extreme care had to be taken. Each piece had to be correctly located six different times. Increased tool and part handling had an adverse effect on quality. With a 5-way drilling machine, quality has been increased, operations cut from four to one.

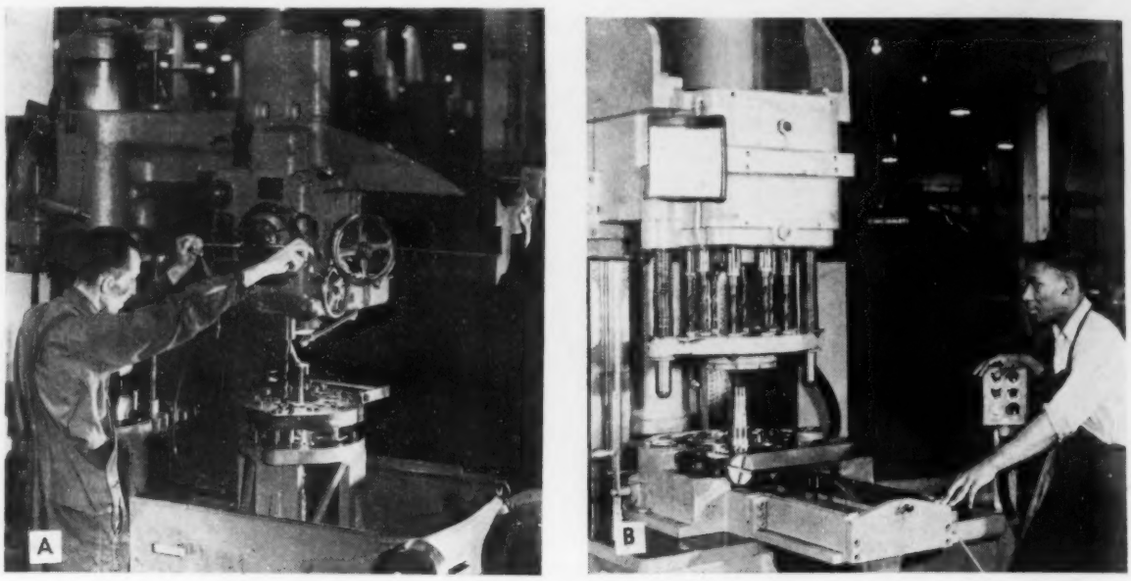


Fig. 5—A 10-spindle machine (B) was replaced by a single-spindle machine (A) for drilling pinion holes.

NEW FILMS

"Microcast—A Story of Industrial Progress," shows the step by step production of precision investment castings by the Microcast process. The 22-min 16-mm film, in color, is aimed at production engineers, engineering societies and engineering students. Available without charge from Microcast Div., Austenal Laboratories, Inc., 244 East 39th St., New York 16.

"Adam to Atom," portrays mankind's amazing technological growth. Emphasizes the part the engineering profession has played in the drive for a better and more productive way of life. This new 29-min, 16-mm sound film is sponsored by the Centennial of Engineering. Available without charge, except for transportation, from Ideal Pictures, 65 E. South Water St., Chicago 1.

"Pick Your Safety Target," an all-color cartoon film based on accident-reduction plans used in industry. Sets forth a three-step plan for detecting accident causes and taking corrective action. Shows how a definite accident pattern emerges from departmental reports of accidents. Provides the foreman with specific goals and tells how he can cut down accidents in his own department. On 16 mm film, sound, in color and black and white. Available from the National Safety Council, 425 North Michigan Ave., Chicago 11.

"Meeting the Challenge," describes manufacture and use of impervious graphite corrosion resistant equipment. Features a diagrammatic sequence of a processing plant constructed of impervious graphite components. Running time 14 min, color, sound, 16-mm, free loan. National Carbon Co. Div. of Union Carbide and Carbon Corp., 30 East 42nd St., New York 17.

"Arc Welding," consists of three 50-frame strips. Strips are for use by instructors to help introduce students to the welding process, equipment, and where and how it is used. Closeup shots show how to hold the electrode, how to prepare and make welded joints. Lincoln Electric Co., Cleveland. Set of three strips, boxed, $19.50.

"Portrait of an Enterprise," documents the many activities of a modern American industrial engineering firm. Describes the many activities of the Dravo Corp. Runs 30 min, on 16 mm film, in color. Available without charge to engineering groups, schools and other interested organizations. Dravo Corp., Neville Island, Pittsburgh 25.

Doesn't mix—

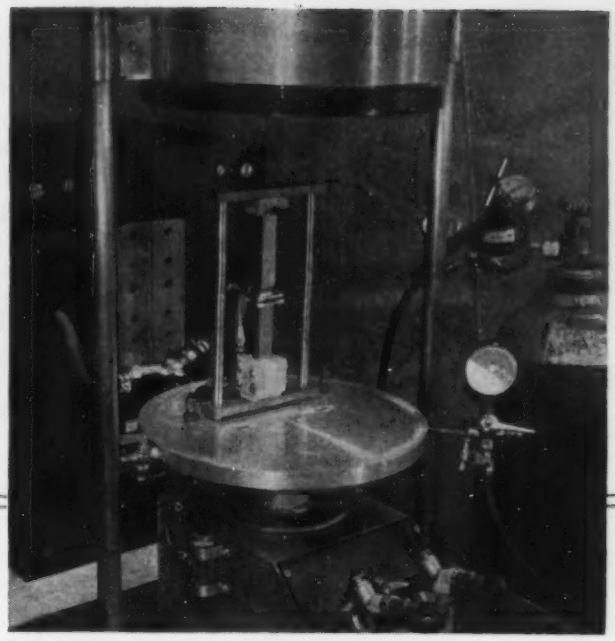


FIG. 1—"Indusivbrazing" apparatus. Bell jar is lowered to platform to effect sealing.

Pure Silver Forms Strongest BRAZED JOINTS IN TITANIUM

◆ Pure titanium under proper conditions is very brazable . . . Quick, uniform heating, inert gas protection and moderate cooling are most favorable.

◆ It has excellent wetting characteristics . . . Hard and brittle joints occur when alloys are used . . . Joint strengths with pure silver are superior to those obtained with silver-brazing alloys.

By H. L. Meredith
Materials and Process Dev. Group
North American Aviation, Inc.
Downey, Calif.

◆ INDUCTION BRAZING titanium to almost any of the commonly used steels or nonferrous metals can be accomplished if the brazing process provides for quick, local, uniform heating, inert gas protection and moderate cooling. Although titanium is very brazable these requirements are necessary since its ability to absorb oxygen, nitrogen and hydrogen is detrimental at brazing temperatures and its thermal conductivity is low.

To fulfill these requirements an "Indusivbrazing" apparatus, Fig. 1, was constructed. "Indusiv-brazing" stands for inert-induction silver brazing.

Quick, local, uniform heating is afforded by a focus-inductor work coil surrounding the titanium shear specimen within the insulated jig

"Pure silver offers the best characteristics as a suitable bonding agent . . . It has excellent wetting characteristics . . . Alloying effect is negligible . . ."

fixture. Inert-gas protection is produced by creating a vacuum in the bell jar chamber, and allowing an inert gas to purge the chamber. Hoses protruding through a focus inductor carry water which cools the work coil during brazing and prevents it from melting or warping. When the current is turned off after brazing, the water-cooled coil acts as a condenser and provides an adequate means of cooling the brazed joint gradually to below 800°F before removing the brazed part.

Joints strong, hard to machine

During preliminary inert-induction brazing tests, a great amount of intermetallic alloying was found within the silver-alloy brazed joints at the interfaces of the titanium-silver alloy zones. The joints were extremely strong but very difficult to machine, displaying varying degrees of hardness throughout the brazed joint. To determine the relationship between joint strength and the type of filler metal used for brazing, a shear strength testing program was established. The specimen shown in Fig. 2 is typical of all specimens used to determine strength v. alloying characteristics. The specimens were made from Mallory Sharon Titanium Corp. grade III, hot-forged bar stock. Preliminary conclusions indicate that pure silver offers the best characteristics as a suitable bonding agent. It has excellent wetting characteristics, the alloying effect is negligible and the joint strength is superior to the joint strength obtained with other silver-brazing alloys.

How alloys affect bond zones

Extremely hard and brittle joints were found to exist when using alloys containing copper, tin, cadmium and zinc. Examinations of titanium silver and silver-alloy brazed joints showed that as the alloying constituents increased in number the microstructure revealed a wider intermetallic compound zone. Joints made with pure silver have a very narrow bonded zone, joints made with the silver-copper eutectic alloy have a wide needle-like intermetallic compound zone, and joints made with alloys such as Easy Flo No. 45 have a much wider and more erratic bonded zone. Likewise, the strength decreases with the addition of low-melting constituents to the silver-base brazing materials. However, joints are made at a faster rate with "Indusivbrazing" techniques when using the low melting ternary and quaternary silver-brazing alloys.

The table shown here illustrates the results obtained with pure silver, "BT" alloy, the silver-copper eutectic and Easy Flo No. 45. The shear strengths obtained with pure silver range between 21,800 psi and 24,106 psi, "BT" alloy gives 19,446 psi to 24,733 psi, and Easy Flo No. 45 gives 16,666 psi to 20,466 psi. Note the significance between the time at temperature and the ultimate shear stress. The joint clearances were constant 0.003 to 0.004 in., the amount of filler metal preplaced within the joint interstices was constant, the inert gas used for purging was consistent and the cooling procedures were the same. The only significant differences in making these specimens were the time at temperature and the type of filler metal.

The chart shows that as the time at temperature decreases the strength increases, for those specimens brazed with pure silver. The specimens brazed with the "BT" alloy follow a very erratic pattern, indicating instability due to the copper in the brazing alloy. The specimens brazed with the Easy Flo No. 45 alloy tend to follow the definite pattern of the pure silver specimens.

Pure Ag shim stock used

Fig. 3 shows the microstructure of an inert-gas induction silver-brazed joint. The filler metal used was 0.003-in. commercially pure silver-shim stock preplaced prior to brazing. The MST-111 titanium has been heated to 1900°F maximum for approximately 1 to 3 min, cooled in an argon atmosphere to 600°F and then cooled in water to room temperature for handling. The bonded zones at the interfaces are very narrow indicating excellent wetting characteristics and negligible alloying. Magnification is 250 diam.

As a comparison, the photomicrograph, Fig. 4, shows the microstructure obtained when silver-brazing alloys containing copper are used. The particular micrograph was made of an "Indusivbrazed" cast and bonded overlay, during experiments involving the development of silver-overlaying titanium. The silver-brazing alloy is

COMPARISON OF PURE SILVER AND ALLOYS

Specimen No.	Bonding Agent	Time at Temp., min.	Total Elong., (in.)	Failing Load, lb	Shear Strength, psi
1	Ag	4.0	0.0084	8,175	21,800
3	Ag	3.0	0.0084	8,300	22,133
4	Ag	1.75	0.0076	8,500	22,666
10	Ag	1.50	0.0064	9,040	24,106
5	"BT"	1.33	0.0084	7,605	20,280
6	"BT"	1.0	0.0052	9,275	24,733
7	"BT"	1.0	0.0042	7,050	18,800
8	"BT"	0.833	0.0040	7,300	19,466
9	EF. No. 45	1.0	0.0034	6,250	16,666
11	EF. No. 45	0.75	0.0040	7,675	20,466

silver-copper-eutectic alloy, containing 72 pct Ag and 28 pct Cu. The titanium is Ti-75A. The dentritic structure in the eutectic-silver-copper matrix reveals the slow-cooling procedure used to prevent cracking within the intermetallic compound.

Titanium MST III shear specimens are shown in Fig. 5 after testing to destruction. The uniformity of the bonded area and the type of fracture within the brazed joint can be clearly seen. The shear specimens were designed to fracture within the brazed joint in order to obtain the shear strength developed by each alloy. From left to right, the brazing material employed is: Fine silver, silver-copper eutectic and Easy Flo No. 45.

Four main disadvantages are encountered when attempting to braze a dissimilar metal to titanium. First is the moderate cost of preparing and maintaining an inert-gas protective system. Second, is the relatively low co-efficient of expansion of titanium. It is necessary to determine whether the joint should be designed so that the joint clearance will not grow larger than the generally recommended 0.0015 to 0.005 in., during the brazing operation. It is best to design the joint so that the material with highest coefficient of expansion will make the clearances larger rather than smaller during brazing. This puts the brazing alloy in compression during solidification.

Ti tends to absorb filler

Third is the very low surface tension of titanium. Titanium has the tendency to absorb the filler metal preplaced within the joint more rapidly than the adjacent dissimilar metal. This is a big problem when joining austenitic stainless steels to titanium and prevents the formation of neat concave fillets. It may be overcome by either plating the stainless-steel joint area with nickel, copper, cobalt, or iron, or by pretinning the joint surfaces with the same brazing alloy by using flux.

Fourth is the low thermal conductivity of titanium. In many cases induction work coil should be designed so that the high-frequency magnetic flux lines will cut through the titanium's exposed

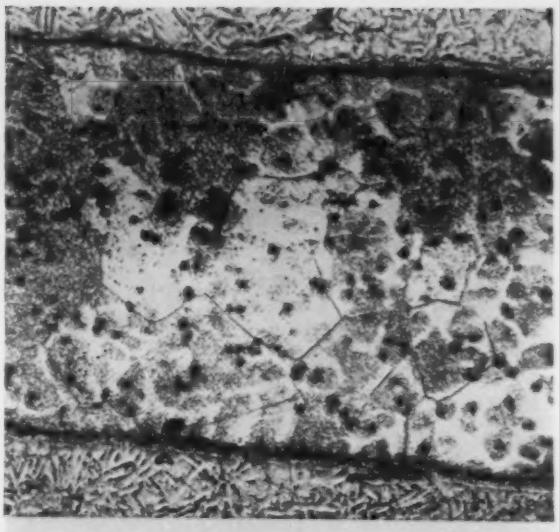


FIG. 3—Titanium-silver microstructure.

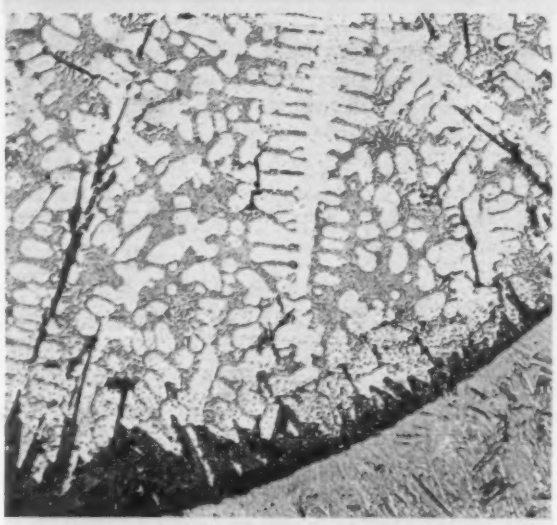
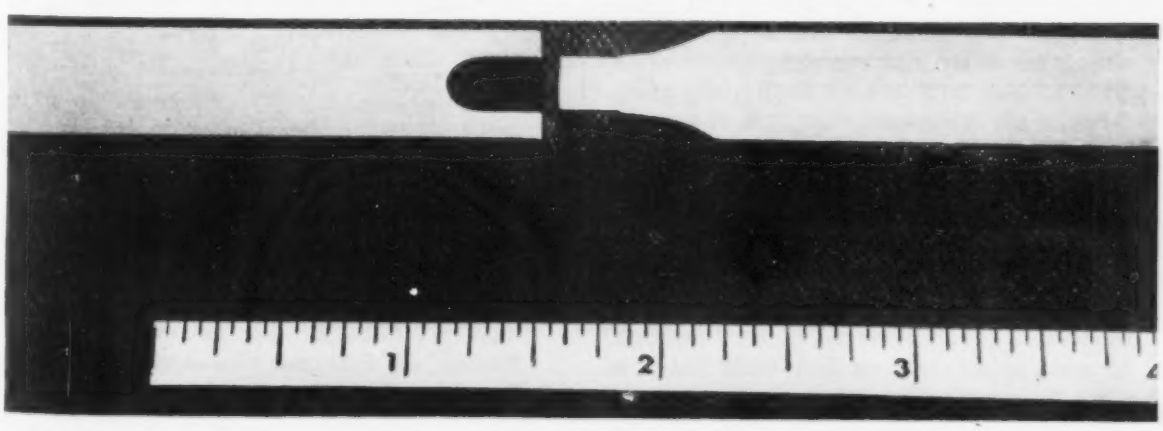


FIG. 4—Titanium silver-copper alloy microstructure.

FIG. 2—Typical double-shear brazing specimen made from hot-forged bar stock.



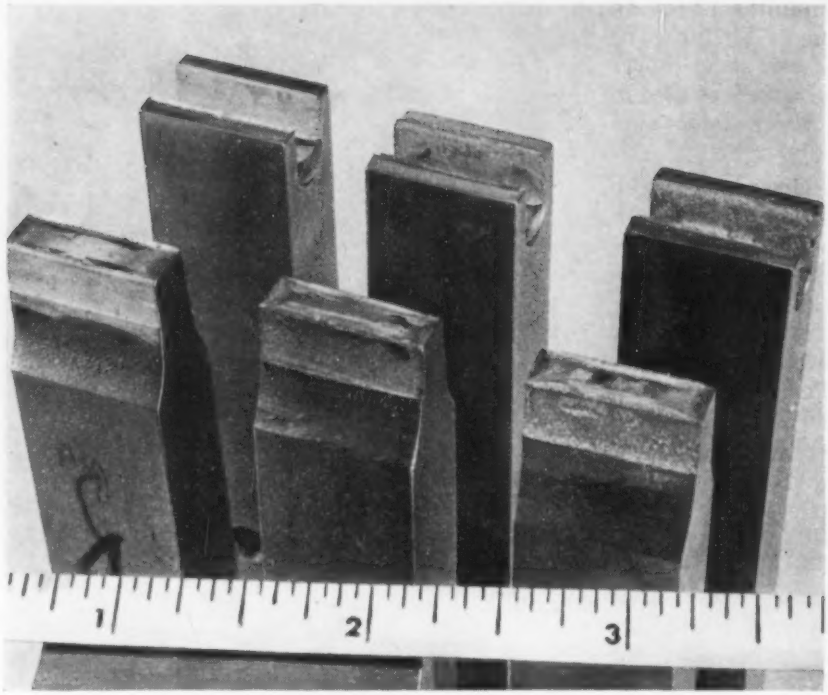


FIG. 5 — Joint fracture comparison showing uniformity of the bonded area and the type of fracture within the brazed joint. To show shear strength developed by each alloy, the shear specimens were designed to fracture within the brazed joint. Left to right, fine silver, silver-copper eutectic and Easy Flow No. 45.

joint surfaces more than they will through the adjacent metal, thus relying upon the preplaced filler metal and dissimilar metal obtaining their heat by conduction.

Cleanliness of the joint surfaces is very important. Chemical cleaning procedures using hot, diluted sulfuric acid, hot 50 pct solution of ortho phosphoric acid, or several mixtures of nitric and hydrofluoric acid solutions are sufficient for preparing the titanium brazing area prior to joining. The best method is to vapor blast or liquid hone the joint areas. These units are more universal and eliminate the several chemical solutions required if brazing dissimilar metals to titanium.

NEW BOOKS

"Basic Welding Principles," by Emanuele Stieri. Mr. Stieri's specialty is writing books on technical and mathematical subjects and to date he has written more than 25 of them. His latest book provides beginner or expert with an authoritative book on welding which is easy to read and easy to follow. Over 650 drawings are closely tied to the text. The book has two sections, one on oxy-acetylene welding and cutting and the other on electric arcwelding. Prentice Hall, Inc., 70 Fifth Ave., New York 11. $5.75. 220 p.

"Soluble Silicates," by Dr. James G. Vail. Published in two volumes, this comprehensive work is one of the most complete reviews of its kind. It deals with history, theory, and application of the soluble silicates. It is of particular value to engineers in the adhesive textile, refractory, detergent and gel industries. Reinhold Publishing Corp., 330 West 42nd St., New York. Vol. I, $9.00, 370 p. Vol. II, $15.00, 600 p.

"Live Loads On Floors In Buildings," by J. W. Dunham, G. N. Brekke and G. N. Thompson. Presents information on floor loads found in office buildings, stores, factories, and warehouses. Gives details of a recent survey in which weight and distribution of goods, equipment and occupants were obtained floor by floor and area by area. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 20¢. 27 p.

"Foundation Engineering," by R. B. Peck, W. Hanson and T. H. Thornburn. Provides material for evaluating subsurface conditions and selecting the most suitable type of foundation for a given site. Among topics included are excavating, bracing, drainage, shoring, underpinning, types of soils, structural design. John Wiley & Sons, 440 Fourth Ave., New York 16. $6.75. 410 p.

"Productivity and Economic Progress," by Frederick C. Mills. Great rises in consumption levels have been the major benefits of the great advances in productivity since 1900. Dr. Mills' paper is devoted to four basic trends in the growth of the U. S. economy: The five-fold increase in real national product; the doubling of population; increase of per capita output; increase in output per man-hour. National Bureau of Economic Research, Inc., 1819 Broadway, New York 23. 75¢. 36 p.

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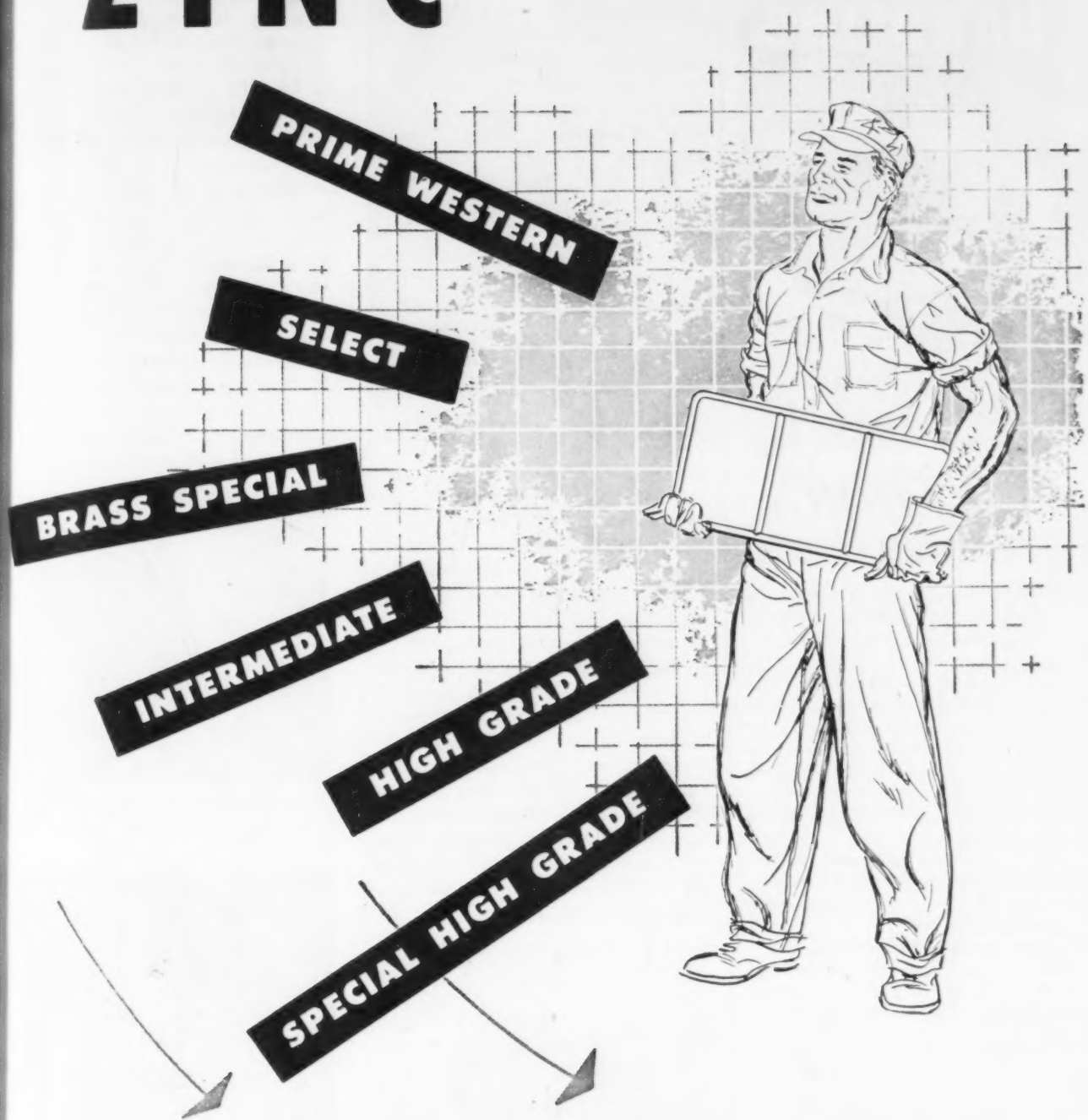

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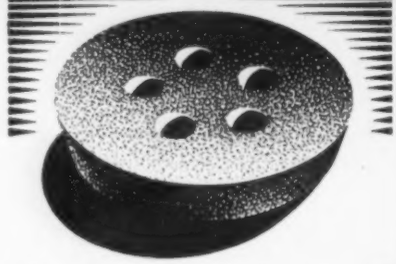

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Technical Briefs

Engineering

MATERIALS:

New alloy tried in pulp digester resists corrosion.

When A. O. Smith Corp. was looking for a new corrosion-resistant alloy to use as a lining material in the dome of a paper and pulp digester, it decided to try an untested new material. The alloy worked so successfully that it is now standard material of construction for that application.

The alloy, Hastelloy F, withstands the corrosive effects of oxidizing and reducing acids. Both acid and alkaline solutions can be handled. The metal resists pitting and stress-corrosion cracking in chloride solutions and has good hot-working characteristics.

Three Years In Digester

This new nickel-base alloy has been subjected to more than 3 years' service in the top vapor zone of a sulfite digester with excellent results. The strong cooking liquor in the digester contained about 10 pct sulfur dioxide. This test has confirmed the satisfactory nature of the alloy for use where severe pitting conditions exist.

All tests made so far indicate the alloy offers a remarkable combination of properties for the new pulping duplex processes requiring weak or strong acids, or sulfurous acid, for the first part of the cook, and an alkaline condition for the final part of the cook. Some of these processes start with a pH 4 or lower and end up with about pH 9.

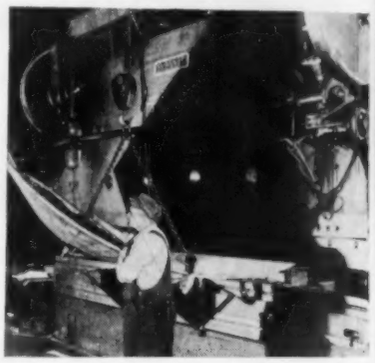
ALLOY LINED DIGESTER, said to be world's largest, is shown being readied for field assembly at mill site. Lining is made of Hastelloy F.

IF YOU WANT MORE DATA

You may secure additional information on any item briefed in this section by using the reply card on page 103. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

Service tests show corrosion rates of less than 0.001 in. per year in both alkaline and acid pulping digesters in either the liquid or vapor phase. These tests cover a variety of pulping woods and cooking conditions. The alloy is especially attractive for service in the vapor phase where corrosion of other alloys has been high.

Resistance to boiling 10 pct solutions of sulfuric acid is excel-



COLD-PRESSING top head segments to form a hemisphere shape. Parts are later welded together.

INTERIOR VIEW of digester after it had been in service for more than a year.

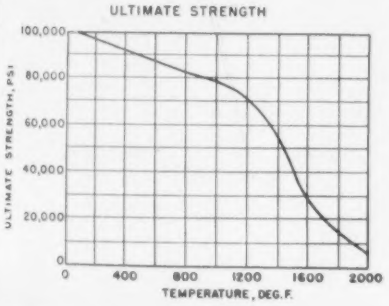
lent. There is good resistance to air-free sulfuric acid in concentrations to 30 pct at temperatures to 176°F. The high chromium content increases its passivity when air or oxidizers are present in the acid.

Compared With Stainless

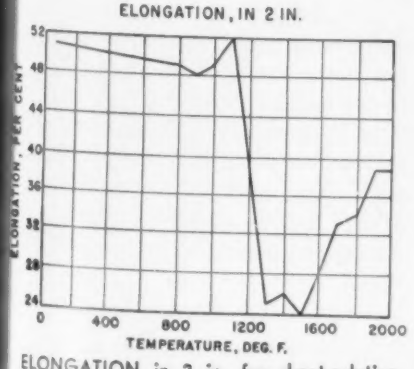
Seventy percent concentrations of boiling phosphoric can be handled successfully. Corrosion rates will, of course, be affected when dissolved copper or other metallic ions that inhibit the action of the acid are present.

The metal is stronger and about as tough as the austenitic stainless steels. It is ductile enough for intricate cold-forming operations, but requires more power to deform than do the austenitic stainless steels.

Alloy strength does not change significantly after furnace cooling from the 1000° to 2000°F range. It loses some of its ductility when cooled slowly from 1600° to 2000°F. Ductility is lowest in the 1300° to 1600°F range, and severe hot-forming operations should not



ULTIMATE TENSILE strength at various temperatures for sheet-solution annealed alloy.



ELONGATION in 2 in. for sheet-solution annealed alloy falls off only slightly up 800° F.

Turn Page

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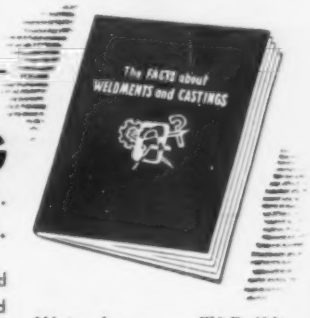
Acme weldments are replacing castings for leading machinery and equipment manufacturers everywhere because they do a better job at lower cost. Experienced Acme engineers at work with Acme's complete fabrication facilities can give *you* these same advantages . . . Acme's new 24-page, illustrated booklet shows you why. *The Facts about Weldments and Castings* tells you what you should know about their relative strength, rigidity, vibration, design flexibility, and cost . . . facts to help you specify and save. And it's yours for the asking . .



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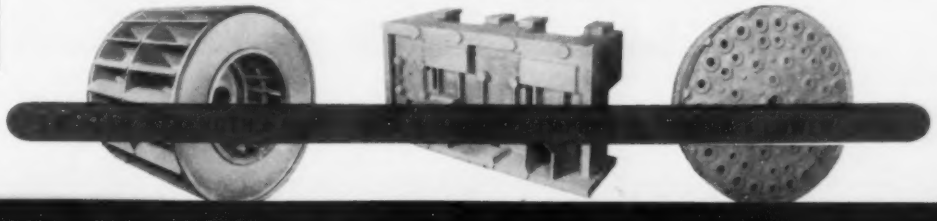

add
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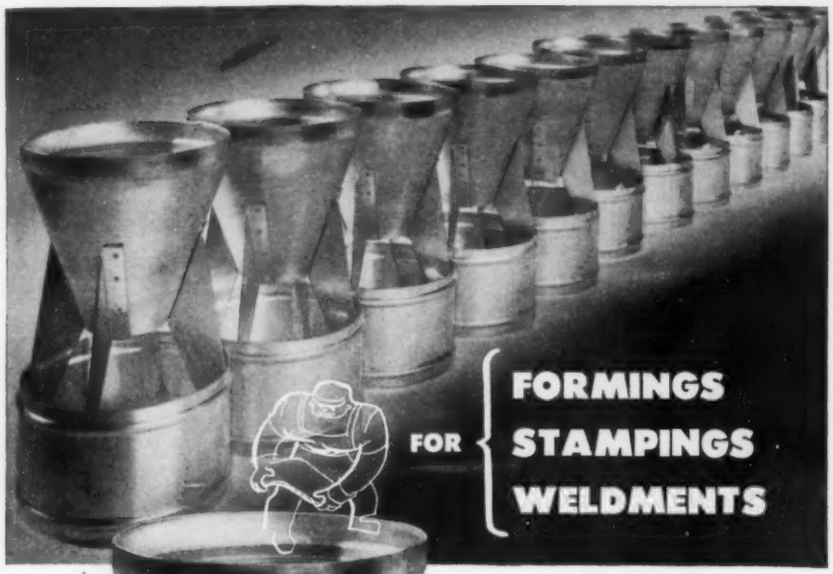

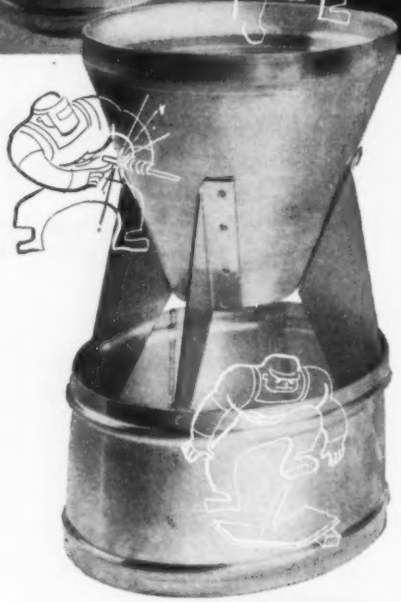

A powerhouse for production—Brandt's "Big Three" are geared to give your production a boost. In all types of metal, any size or shape, call on Brandt — as many satisfied government and industrial manufacturers have been doing for years . . .

Brandt's main plant — located for your advantage — near steel mills and major rail, water and highway transportation facilities.

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CHARLES T. BRANDT, INC. Baltimore 30, Md.

be attempted in this temperature range.

In density, the alloy is similar to comparable nickel-base alloys. Electrical resistance is somewhat higher than 18-8 stainless steel and thermal expansion characteristics are about 10 pct lower. It is nonmagnetic. Its modulus of elasticity approaches that of steel. Thermal conductivity has not been fully determined, but indications are that it will be about the same as 18-8 stainless steel.

Physical Properties

The metal can be welded by the metallic arc, inert gas shielded arc, and resistance welding methods. Welds made by the metallic arc and inert gas shielded arc methods are ductile, and have mechanical properties comparable to the base metal.

Metallurgical characteristics of the alloy are ideally suited for resistance welding. The alloy has been tested as a lining for pressure vessels to be used in the chemical, petroleum, and paper and pulp industries.

The welded lining passed tests for thermal shock, fatigue, shear strength, bond strength, hot-forming and hot-bending.

BROACHING:

Internal contours of aircraft engine parts broached.

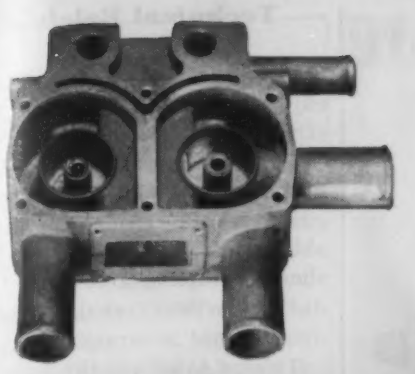
An ingenious broaching setup recently developed permits the use of standard broaching machines for broaching intricate internal contours of aircraft engine parts.

The six identical contours between the internal lobes on the part are broached in two passes, three alternate contours in the first pass, and the remaining three in the second pass. A 2-station fixture is necessary to facilitate locating from the offset holes in the part. The part is shifted to the second fixture which is shuttled in broaching position for the second pass.

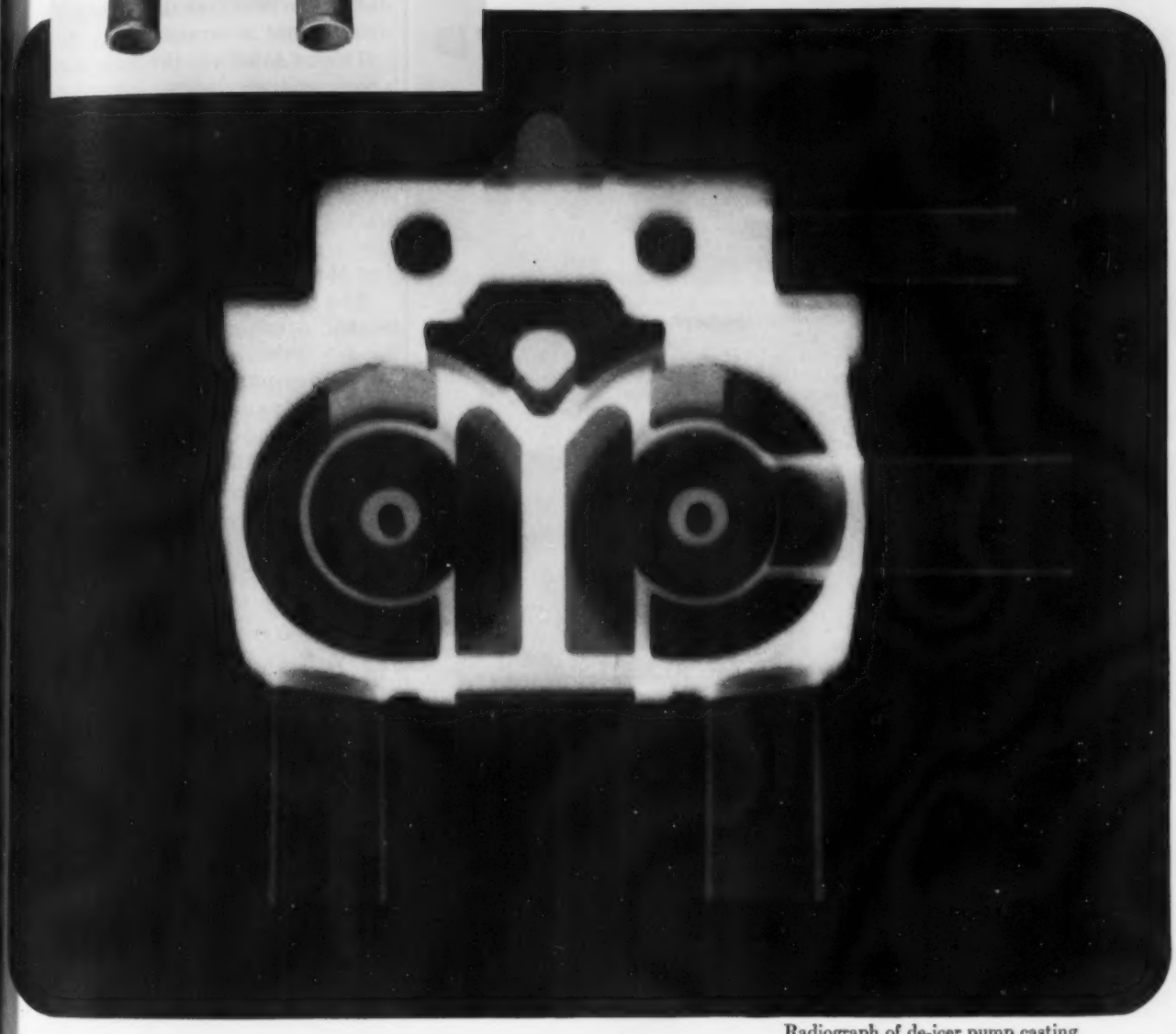
Multiple Guide Shoes

Another feature is the use of a built up type broach incorporating

Turn to Page 152



This heart must pulse or the Plane's in trouble—



Radiograph of de-icer pump casting

so it's checked by RADIOGRAPHY

ICE can down a plane as sure as flak. So it's kept from wing-edge and prop by the throbs of this pulsating heart.

Easy to see the importance of this tiny unit—and why its castings must be sound. To make certain, each part is x-rayed. This way weakness cannot lurk in a hidden flaw.

What's more—a part so finely finished calls for careful machining, which would be wasted if x-rays did not first reject any unsatisfactory castings.

It's another example of why more and more suppliers of castings use radiography. It speeds the establishment of proper casting technics and lets you be sure only sound castings are delivered.

If you'd like to know how radiography can improve your operations, get in touch with your x-ray dealer. Or, if you like, write us for a free copy of "Radiography as a Foundry Tool."

EASTMAN KODAK COMPANY
X-ray Division, Rochester 4, N. Y.

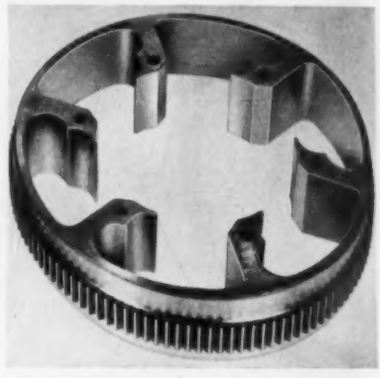
Radiography...
another important function of photography

Kodak
TRADE-MARK

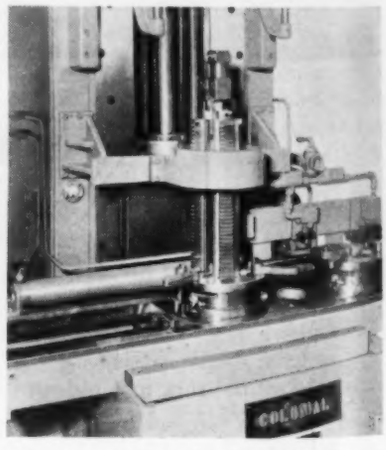
inserted broach sections. The machine is a standard 15-ton, 66-in. stroke pull-down single ram broaching machine made by Colonial Broach Co., Detroit. Multiple guide shoes guide the broach above and below the part. These shoes contacting grooves in broach during vertical travel, insure high dimensional accuracy.

Twelve dowels in the fixture, six above and six below, engage six holes in the six lobes in the part. Complete support of the six lobes is thus provided while the part is being broached, holding the thin walled projections so as to effectively prevent any distortion during the broaching operation.

The side shuttling fixture has a central opening through which the broach is returned after each pass. All movements of the shuttle are controlled and interlocked by limit switches, and operated hydraulically by the hydraulic system of the machine.



SIX CONTOURS between internal lobes are broached in two passes on Colonial broaching machine.



THREE ALTERNATE CONTOURS between lobes on aircraft engine part are broached on this single ram pull-down broach.

GRINDING:

Helix angle facing ground on spar mill cutter tips.

A special attachment for use on Cincinnati No. 2 Cutter and Tool Grinders, developed by a crib leadman at Temco Aircraft Corp., Dallas, has made it possible to grind carbide spar mill cutter tips with a helix angle facing rather than the flat facing normally used.

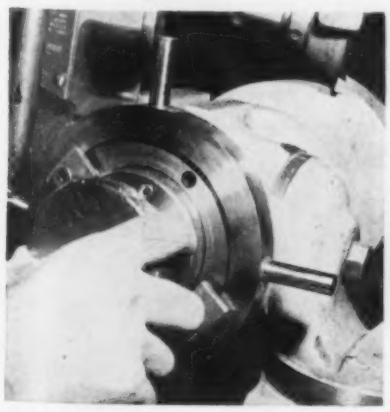
Helical-ground faces provides a constant rake angle in relation to the center line of the cutter. With a flat-ground tip, the rake angle—though constant on the tip itself—often varies as much as 7° from one end to the other in relation to the center line of the cutter.

Guide Wheel Used

Main obstacle to creating a helical face has been that it could not be performed on standard grinders due to the accurate spacing required. Once the helix had been ground, however, the tips could be sharpened with no difficulty.

This problem was overcome by using a guide wheel on the work head spindle. This wheel has four dowel pins or spokes pressed into holes drilled at 90° intervals in its outer rim.

In operation, the spokes slide on an adjustable guide or straight edge as the work is fed to the diamond grinding wheel. This causes a spiraling action on the part of the work and results in the grinding of the desired helix.

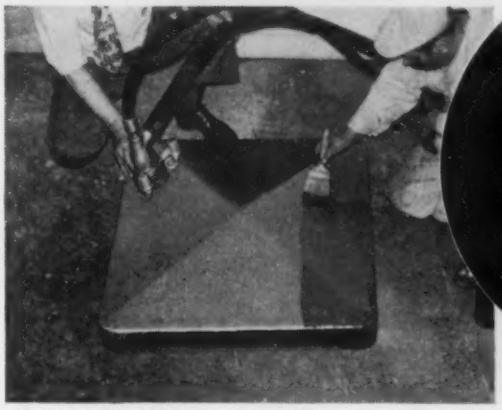


HELIX ANGLE can be ground on carbide spar mill cutter tips by using special attachment developed at Temco Aircraft Corp.

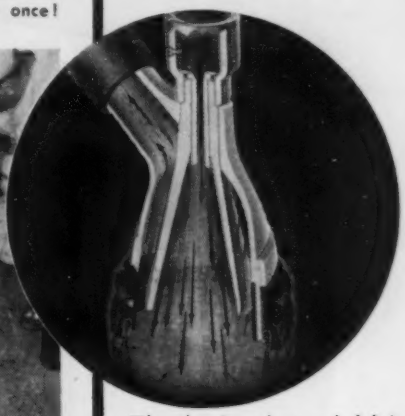
Turn Page

BLAST CLEANING
WITHOUT DUST OR GRIT

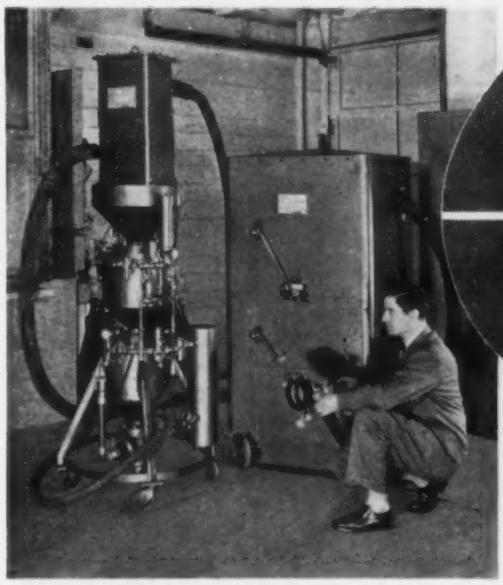
VACU-BLAST scours the surface, eats the dust and reclaims the abrasive — all at once!



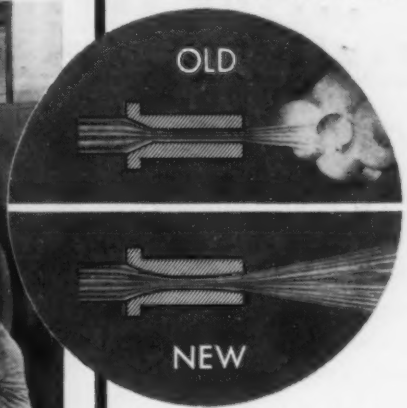
Right in the midst of your working shop, Vacu-Blast removes rust, paint and scale from metal, masonry and wood with a thoroughness and efficiency that only abrasive blasting provides. Surfaces are perfectly prepared for welding, painting or process requirements, yet there's no dust or scattered abrasive to interfere with other operations.



The abrasive, dust and debris are confined within the blast gun — they are picked up by Vacu-Blast's unique, patented vacuum return. The blasted surface is left clean and dustless. Your shop is protected from the nuisance of scattered dust and grit. Valuable abrasive is reused numerous times.



This is Vacu-Blast's working team — the blast gun — the combination generator/reclaimer, and the dust collector. All are compact, portable and easy to move around.



Newest Vacu-Blast improvement is the flared, high efficiency nozzle that does up to 25% more work per hour than previous nozzles. Developed through extensive research, the throat design of this new nozzle eliminates inefficient shock waves, resulting in full power flow of abrasive. This new nozzle is now provided on all Vacu-Blast equipment, and has been made available to all present users.

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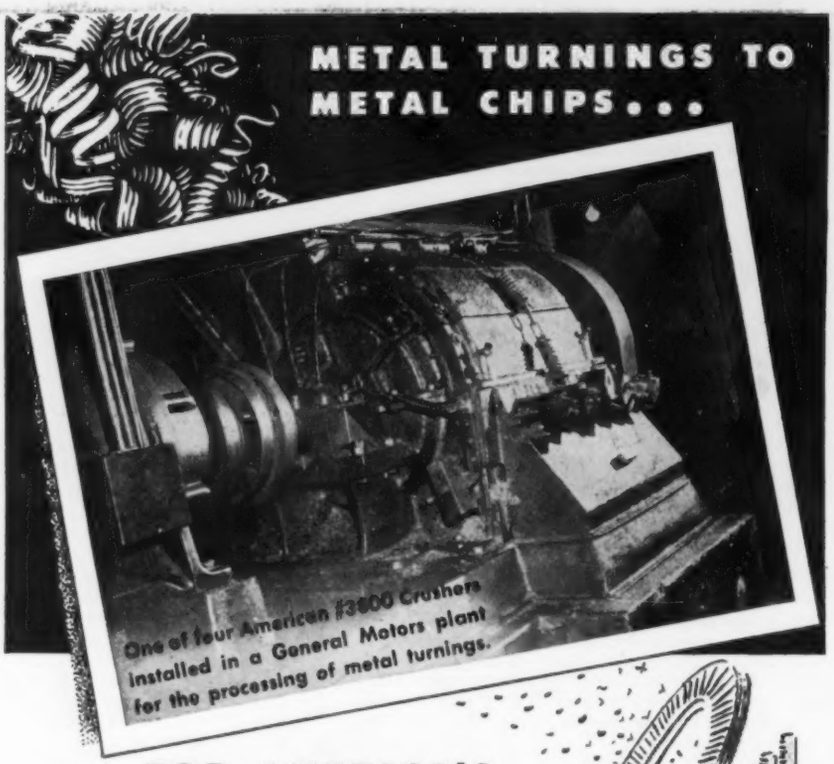
METAL TURNINGS TO
METAL CHIPS...
One of four American #3600 Crushers installed in a General Motors plant for the processing of metal turnings.

...FOR AMERICA'S BLUE CHIP COMPANIES with American METAL TURNINGS Crushers

WHY an AMERICAN installation makes Dollars and Sense:

These cost-conscious companies have long-since learned that American-crushed metal turnings quickly recover an initial American Crusher investment in these important ways:

$3 to $4 Extra Profit Per Ton: With higher scrap values for metal chips over ordinary machine shop turnings, a daily crushing capacity of only 2 tons will produce *$1200.00 per year in extra profits.*

Up to 80% Less Space: Reduction to metal chips solves many expensive handling and storage problems, and allows easy briquetting.

30-50 Gallons Per Ton Cutting-Oil Recovery: An important reclamation that adds new profits with an American Crusher installation.

PROMINENT AMERICAN CRUSHER USERS

The users of American Metal Turnings Crushers read like a "Who's Who" of American Industry. Included are such names as:

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Write for Bulletin "METAL TURNINGS CRUSHERS"

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1439 MACKLIND AVE. ST. LOUIS 10, MO.

WELDING:

Drill collars reclaimed in less time with faster welding unit.

A unusual welding machine is now used at C&W Machine Works, Great Bend, Kansas, to reclaim drill collars in about one-half the time formerly required. The added speed has doubled the capacity of the installation and has made it unnecessary to purchase another jig or provide added space.

Two Unionmelt Type D welding heads mounted on a single carriage deposit a layer of metal on small-diameter cylindrical pieces, using submerged melt welding with the multiple-bead technique.

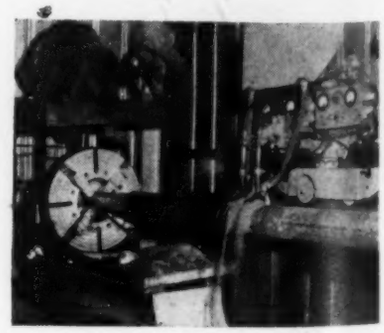
Faster Welding

The main advantage of the installation is increased welding speed. Using two heads gets the job done twice as fast. Also, with this spacing of the electrode, there is no overheating of the metal. The composition does not stick to the collar as it might if higher current and a single electrode were used, and there is little problem of controlling the molten metal.

Collars Rotated

Welding conditions are rather critical for a smooth job. The collars are rotated one revolution per minute and the speed of travel is 2⅝ per minute. These values are chosen so that the total number of beads will just fit the circumference of the collar.

The welding current applied to each head is 350 amp at 28 to 30 v. A tough, strong, work-hardening deposit is obtained.



DRILL COLLARS were reclaimed in about one half the time formerly required by using submerged melt welding with multiple bead technique.

INSPECTION:

Spectrometer cuts analysis time, speeds warehousing operations.

Acceptance and stocking of metals has been substantially speeded through use of a direct-reading spectrometer at Fairchild Engine & Airplane Corp., Hagerstown, Md. An analysis formerly requiring 4 hr is now done in 5 min.

The spectrometer analyzes metal samples and provides an instantaneous reading on the percentage of each element in the metal on dials.

The Fairchild spectrometer replaces time-consuming wet methods of chemical analysis. The instrument represents a major advance in the industry's methods of measuring alloying constituents of metals.

Handles Many Metals

While a few direct-reading spectrometers are in use, usually they are limited in the variety of metals and elements they can analyze. The Fairchild equipment can handle metals having five different matrices or alloy bases—aluminum, brass, stainless steel, magnesium, and low alloy steels.

Valuable as a stock control device, the spectrometer helps verify chemical analysis affidavits submitted with shipments of raw materials.

Built by Baird Associates, the spectrometer is kept in a special room under strict temperature and humidity control. Operation is almost completely automatic.

Automatic Cycle

The sample is placed in a specimen holder between two electrodes, the door is closed, and a starter button is pushed. The instrument takes over, cycles itself, causes the recorders to stop at the correct concentration readings, then shuts off.

On low-alloy metals, the percentage of concentration of each element is registered directly on recorders. Each element has its own recorder dial. On high-alloy metals, readings are referred to concentration versus recorder read-

Turn Page

YOU'RE SAFE WITH THE

NEW SUPER-TOUGH

WILLSON SAFETY HAT

THE NEW WILLSON SAFETY HAT is entirely new in design, material and method of manufacture . . . tough as metal and more resilient! Here are some other outstanding features of the new Willson Super-Tough* Safety Hat . . .

streamlined contour—deflects objects more effectively and provides a greater safety "pocket" inside.

new suspension design—adjustable "hammock" headband is suspended *inside* at 6 points. No exposed rivets or lacing—no holes through hat.

comfortably cool—space between headband and shell provides ample air circulation for wearer.

moisture resistant—practically 100% waterproof and resists many caustics and acids.

Passes all required tests with an extra margin of safety!

Write for your copy of the new bulletin describing the Willson Super-Tough* Safety Hat.

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More than 300 Safety Products Carry This Famous Trademark

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WILLSON PRODUCTS, INC., 231 Washington Street, READING, PA.

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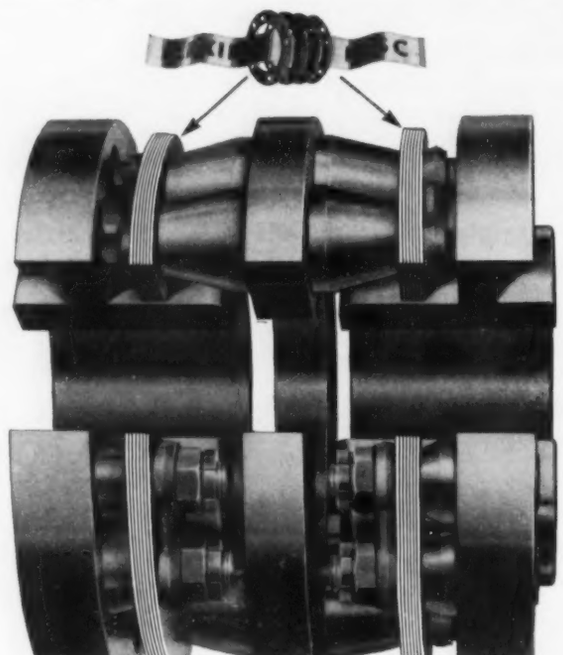
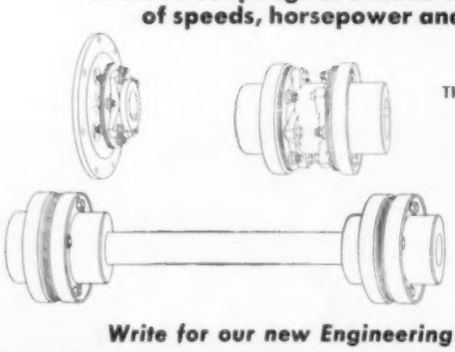
DISTINCTIVE ADVANTAGES of THOMAS ALL-METAL COUPLINGS	
FACTS	EXPLANATION
NO MAINTENANCE	Requires No Attention. Visual Inspection While Operating.
NO LUBRICATION	No Wearing Parts. Freedom from Shut-downs.
NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.



Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

Thomas Couplings are made for a wide range of speeds, horsepower and shaft sizes.



THE THOMAS PRINCIPLE GUARANTEES PERFECT BALANCE UNDER ALL CONDITIONS OF MISALIGNMENT.

MANUFACTURERS OF FLEXIBLE COUPLINGS ONLY FOR OVER 35 YEARS

Write for our new Engineering Catalog No. 51

THOMAS FLEXIBLE COUPLING COMPANY

WARREN, PENNSYLVANIA, U.S.A.

ing curves to determine the true concentrations.

A high-voltage spark excites the sample, causing it to emit light. This light enters the instrument's optical system and is spread into a spectrum by a diffraction grating. Some spectrum lines are particularly concentration-sensitive, and their brightness can be used to determine the concentrations of elements in the sample.

Read Answers From Dials

Spectrum lines pass through slits where they strike photomultiplier tubes, one tube per line. These tubes produce a current proportional to the brightness of the lines, and the current from each tube charges condensers. Triggering circuits translate this voltage to readings on recorder dials, giving percentages of element concentrations.

RADIOACTIVE COBALT:

Tracer on carriers helps spot jams in pneumatic tubes.

A 60¢ drop of radioactive cobalt is playing an important role in the internal communication system of the Carborundum Co. plant at Niagara Falls, N. Y.

The cobalt, fastened permanently to the metal mailing carriers that service the 40-acre plant and executive offices is easily detected by a Geiger counter—and thus has practically eliminated delay in locating jammed mail car-

CARRIERS JAMMED in pneumatic tubes are quickly located using Geiger counter. Carriers are loaded with disk of radioactive cobalt.

RADIOACTIVE COBALT is easily placed in carrier. Radioactivity, about equal to radioactivity of a luminous watch dial, is not harmful.

riers in the pneumatic tube mailing system.

Some 1500 to 2000 messages are sent daily through a system serving 16 departments. Uninterrupted operation is necessary. Chief function of the communication system is to handle customer orders through various stages of processing.

Finding the Jam

Failures of pneumatic tube systems are caused in a number of ways. Every time one occurred—before the new detection system was initiated—it was necessary to send men along the entire length of the tunnel, poking metal snakes into the tubes at section joints, to locate the jam. With some 8000 ft of tubing to be investigated, this slow tedious process often took hours, sometimes days.

Now, with each of the 200 mail carriers tagged with the radioactive cobalt, one man, armed with a Geiger counter can walk along the tube lengths and find the source of a stoppage in a matter of minutes.

How to Apply Cobalt

To apply the tracer element, absorbent paper discs, 1 in. in diam, are placed into a solution of cobalt and water, then placed between two pieces of plastic. With the use of heat and pressure, the radioactive discs are hermetically sealed in the mailing carriers.

Health hazard is no problem, since the amount of cobalt used makes the mail carriers no more dangerous than the average luminous dial of a wristwatch.

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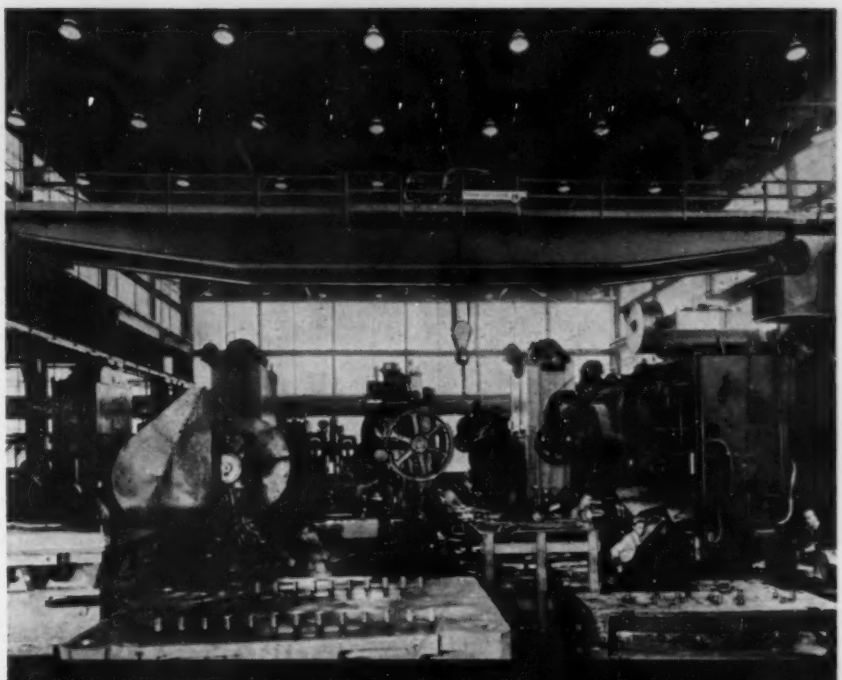


For DEPENDABLE Service
Specify a "Shaw-Box" Crane

300-TON GIANT or 500 lb. crane — Shaw-Box builds all capacities for every need. Power stations, railroad shops, steel mills and industrial plants of every description rely on the dependable service that has distinguished "Shaw-Box" Cranes for generations.

MULTI-MOTORED CRANES were introduced by Shaw-Box in 1888. For more than 65 years, our entire facilities have been devoted *exclusively* to the development and production of load-handling equipment. When you buy a "Shaw-Box" Crane today, you can select from the greatest variety of standard types available anywhere.

MANY FEATURES ORIGINATED by Shaw-Box have become standard in crane manufacture everywhere. For enduring stamina . . . for complete safety for man, load and crane . . . for unmatched load-handling economy and maintenance convenience — you can make no better choice than a dependable "Shaw-Box" Crane.

PLAN YOUR REQUIREMENTS for today and years to come. We will gladly cooperate with your engineering consultants or your own staff. Or write for Catalog 219 showing "Shaw-Box" Full Electric Traveling Cranes from 5 tons up; Catalog 218 for 'Load Lifter' Cranes from 1 to 20 tons; or Catalog 221 for Series "D" All-Electric 'Load Lifter' Cranes from 5 to 20 tons.

"Shaw-Box" CRANES

MANNING, MAXWELL & MOORE, INC. Muskegon, Michigan

Builders of "Shaw-Box" and 'Load Lifter' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, and 'American' Industrial Instruments.

THREADS:

Spring inserts solve threading problem in aluminum castings.

By changing from cast iron to aluminum for the bodies of fire pumps, engineers of Hale Fire Pump Co., Conshohocken, Pa., reduced the weight of each pump 250 lb. With cast iron bodies the pumps previously weighed 600 lb. as compared with the present 350 lb per pump with aluminum bodies.

Spring Inserts Tried

In designing for aluminum, however, Hale faced the problem of thread strength in the 70 tapped holes by which the bodies are assembled. Without reinforcement, the aluminum threads would not safely stand up under a hydrostatic test pressure of 800 psi. The manufacturer resolved this quandary by standardizing on stainless steel Heli-Coil thread inserts.

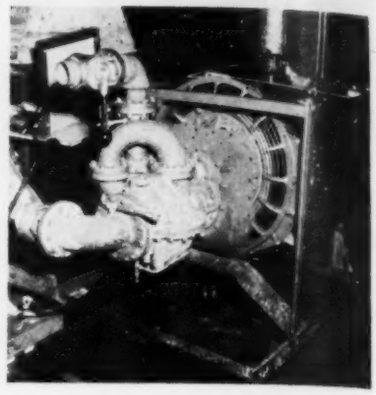
Formed of wire of a diamond-shaped section, these spring-like inserts add ample strength to withstand the high pressures, resist corrosion and, of course, eliminate the galling and wear which would develop in aluminum threads as the pumps are disassembled for cleaning or repair.

By distributing the stress over a larger area they also prevent the stripping which might result in the field should mechanics draw up the cap screws in the aluminum bodies with too much force.

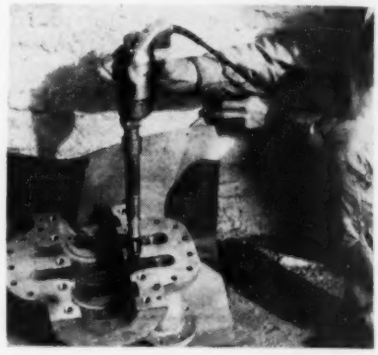
Two 5/16-18 inserts are used in the head casting, 10 5/8-18 inserts in the body and 58 inserts of 7/16-20 size in the packing housing and body. The small inserts are installed manually with a hand inserting tool. The larger size inserts (7/16 and 5/8) are installed with portable electric tools equipped with wrench supplied by the insert manufacturer.

How Castings Are Prepared

Preparing the casting to receive the inserts takes no more time than is normally required to drill and tap aluminum. Standard tap drill sizes are used as specified and taps supplied by the insert manufacturer form the threads that receive the inserts.



STUDS HOLD two halves of aluminum housing of this two-stage centrifugal fire pump together. Insert-reinforced threads are used.

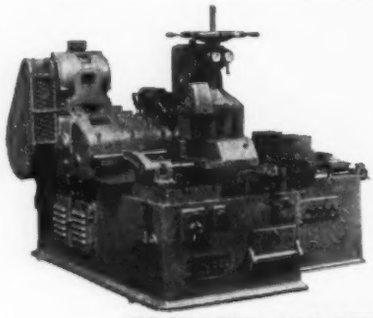


TOOL PREWINDS inserts to fit into tapped holes in top half of aluminum pump housing. After insert is installed, it expands and binds against tapped threads.

Cornell Builds Synchrotron

Scientists at Cornell University, Ithaca, N. Y., are constructing what is anticipated will be the most powerful electron synchrotron in existence—a 1-billion-electron-volt machine. Completion of the machine is expected to open up a vast new field of high-energy research.

Dr. Robert R. Wilson, director of the Cornell Laboratory of Nuclear Studies, conceived the design for the new super-synchrotron, which is being built with funds supplied by the Office of Naval Research.



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98 Years' experience, has excellent contacts with 97% of the buying power in the metalworking industry. Will make 137,000 calls every week—

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Put The Iron Age to work selling your product right away.

PLATING:

Maintenance problem on ram of hydraulic shear solved.

A costly maintenance problem revolving around operation of a hydraulic shear in a large steel mill in the Chicago area, has been solved through application of industrial chromium plating.

The big shear is part of a 44-in. blooming mill setup. The ram, weighing approximately 10 tons is 10 ft long, 40 in. in diam on a 48-in. span and 24 in. in diam on the remaining 6-ft span.

Both diameters are packed using chevron type packings. Operating pressures of the press are between 3000 and 4000 psi.

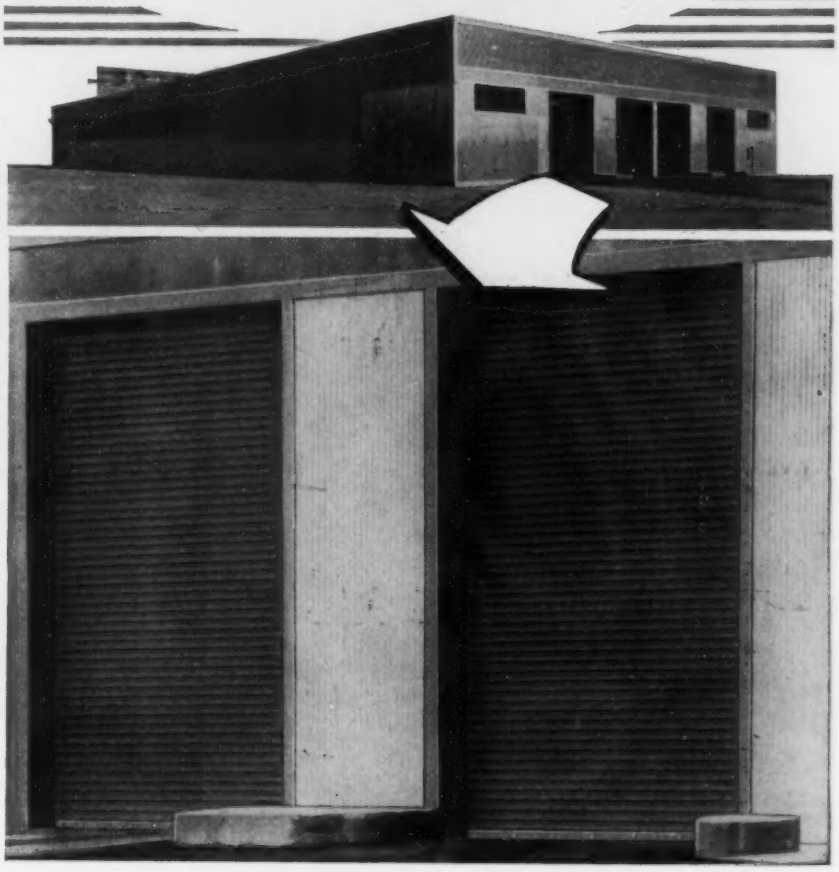
Operating experience with this ram as a cast steel or forged steel unit showed a steady deterioration of the ram surfaces over a period of 6 months. Repacking was necessary every week or two and, due to leakage, pit conditions were very uncomfortable.

Since the ram was chromium plated, it has been in operation 2 years. During time it has been repacked four times on the 40-in. diameter and twice on the 24-in. diameter. Since leakage has been virtually eliminated, pit conditions are much improved.

The ram chromium plated by the Chromium Corp. of America, Chicago, is typical of many installations in many manufacturing plants.

CHROMIUM PLATING on ram of this big shear in a large Chicago steel plant reduced maintenance costs.

KINNEAR
Steel Rolling Doors
increase efficiency in another modern building



Ward Steel Co. Pleased with Kinnear Doors

"We certainly are very pleased that Kinnear Doors were selected . . . we operate five of them, and at all times have experienced the utmost of performance."

Mr. J. A. Parsons, Vice President
Ward Steel Co., Cambridge, Mass.

— And in thousands of other buildings, old and new, Kinnear Rolling Doors have proved that they give *better* service at *lower* cost. Their efficient *coiling upward action* and protective all-metal interlocking slat construction permit maximum use of all space around doorways — *inside and outside* the building — always.

Kinnear Rolling Doors open and close with smooth, time-saving ease *year after year*. They assure extra protection against wind, weather, intrusion, and fire. Available for manual or motor operation. Electrically operated doors can be equipped with control switches at any desired number of locations. Kinnear Steel Rolling Doors are built in any size, for easy installation in old or new buildings. *Write for full details today.*

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FACTORIES:
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180 m.p.h. push-up . . .

Any time you fly in a Martin 4-0-4, Superior tubing is probably working for your safety.

Once you're airborne, watch the 840-pound main landing gear assemblies flip forward and up with amazing speed, even though they may be working against a 180 m.p.h. drag. Fast landing gear retraction gives you an extra margin of take-off safety because "clean" aircraft have better flight characteristics.

Chances are your Martin 4-0-4 contains many feet of Superior ½" stainless steel tubing. In the hydraulic system, this tubing operates at a pressure of 3000 p.s.i., normally. On Martin's torture racks, it has demonstrated remarkable endurance under violent pressure surges at 1000 cycles *per second*, even around minimum bends.

Performance like this may well have a bearing on your production problems as well as on your personal safety. Superior's long experience in fine tubing, backed by highly-developed production equipment and extensive research and testing facilities assures you of top-quality small tubing for doing tough jobs well. Outline your own production problems in a letter to us, right now—we'll send you complete information and the appropriate Data Memo by return mail. Address: Superior Tube Company, 2004 Germantown Ave., Norristown, Pennsylvania.

Round and Shaped Tubing available in Carbon, Alloy, and Stainless Steels, Nickel Alloys and Beryllium Copper.

Superior

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West Coast: Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif. UNderhill 0-1331

All analyses .010" to ⅝" O.D.
Certain analyses (.035" Max. wall) up to 1⅜" O.D.

Steel Prices Will Go Up; Mills Will Move Slowly

Higher costs over long period have not been reflected in prices . . . Increases will be selective . . . Each product will be priced to carry its own weight . . . Ingot rate holds.

Steel prices will go up now that controls have been lifted. But producers will not hurry to put a general increase into effect at once. They first want to get a line on how much the seventh wage round is going to cost them.

They will stick with their original plan to move cautiously on the price front. And they will try to avoid embarrassing the Administration. But they are convinced that selective increases are necessary to achieve reasonable profit margins and correct price inequities that arose between items during so-called stabilization.

Better Get Ready . . . So steel consumers might as well prepare for the inevitable—high prices by about midyear, if not before.

Judging by the strong pressure for delivery manufacturers are exerting on mill suppliers, they are alert to likelihood they will have to pay more for their steel before too long.

When price increases come they will be on a selective basis. Goal is to make every item on mill books pay its own way—as long as the market situation permits.

Didn't Carry Load . . . Users of bars, structurals, rails, and plates will likely face the stiffest increases. Some producers are convinced that these products have not been pulling their share of revenue, based on cost data they are continuing to study. Under controls there was no chance to rectify distorted price relationships because increases granted were figured on a percentage basis.

Some mill executives are urging that price adjustments be made reasonably soon on grounds that they are justified—so why delay? But more cautious officials favor (1) careful study of the price structure before any moves are made; (2) determination of possible cost increases resulting from wage talks which are likely to begin no later than June 1; (3) avoid risk of public reaction to precipitate increases and (4) avoid embarrassing the Administration that freed them from controls.

Some May Differ . . . This reasoning will likely prevail, although marginal or high cost producers may be expected to move in advance of the bulk of the industry—especially if their order books indicate the traffic will bear still higher premium prices.

As long as the market continues strong, prices will hold firm. But it has always been true that once demand weakens steel prices will quickly reflect market conditions and decline. (Producers charging premium prices will likely move first on the way down, too.) So the mills are certainly going to do something to offset rising costs while they have the opportunity.

Things Look Good . . . Mills can look forward with reasonable certainty to a good year. All landmarks point to this; the economic situation is good. People apparently have money to spend on products made of steel and have no plans to hoard it. Autos and appliances especially are red hot.

Defense business will be at least as good as last year; some expect a quickening of delivery schedules on military items. These factors may be expected to spur steel orders for defense: (1) Inauguration of the Malenkov regime in Russia raises new doubts. (2) Investigation of ammunition shortages will sharpen already quickening procurement schedules. (3) Red shooting of Western planes this side of the Iron Curtain will firm defense determination. (4) Eisenhower economies are aimed at getting most fire power per dollar; cuts are to be administrative, not material.

Detroit Still Leads . . . A careful check of steel demand by IRON AGE editors in major industrial areas shows Detroit still the pacemaker in scorching steel demand. A development of that market area is the "daisy chain" moving broker steel from hand to hand while prices leapfrog. Because of this consumers are occasionally paying 14¢ or 15¢ per lb for sheets. Mill price is about 6¢ per lb.

This is a good indication of the tightness of the market. These prices are not being paid just by the little fellow, but by some of the biggest consumers. Big consumers are also still actively seeking steel from warehouses.

A considerable amount of third quarter conversion business has been booked. One mill which insists on a non-cancellable clause in conversion contracts is being pestered to accept third quarter business on that basis. This shows a great degree of consumer faith in the market beyond midyear.

Warehouse business continues good, although some distributors are alert for signs of decline from current high sales levels. Inventories are about 65 pct of "normal," with heaviest pressure on hot and cold-rolled sheets, large bars, and heavy plates and structurals.

...*when you LEAD them*, that's game in the BAG

You have to shoot *ahead* of fast-moving game, if you want to take home something for dinner. Same with business. Now's the time to plan for the day when you can get all the materials you want, with allocations gone, orders maybe not so plentiful, and competition red-hot. ● Allegheny Stainless Steel can work marvels in adding sales advantages to the products you make, or reducing operating costs in the equipment you use. Let our Development Engineers show you how.

Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.

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You can make it *BETTER* with

Allegheny Metal

W&D 4098 B

Market Briefs and Bulletins

Won't Cut Heavy Press Program . . . New economy moves in the Defense Dept. will not affect the Air Force's heavy press program which it is estimated will cost $389 million. Foundations for some of the finished equipment have already been completed and erection of the presses will begin later this year. One 14,000-ton extrusion press is expected to be in operation this summer. German-made, it is scheduled to go to the Aluminum Co. of America's plant at Lafayette, Ind.

Raise Ore Prices . . . Second quarter iron ore prices have been set by Cleveland-Cliffs Iron Co. New levels are established on the basis of $9.70 per gross ton for Mesabi Range non-bessemer ore, with customary differentials for other grades. The increase includes a 37¢ rise in transportation costs which buyers had been paying and results in a net hike of 28¢ per gross ton to the consumer. The new prices will also hold for the third quarter unless there is a wage increase.

Set Scrap Ceiling . . . Maximum price of scrap for the six nations of the European Coal and Steel Pool has been fixed at $36 per ton. It is believed that this maximum level will be dropped $3 to $4 in a few months.

Electroplaters Get More Nickel . . . National Production Authority says it is taking immediate action to divert sufficient nickel to the electroplating industry to permit at least a minimum level of operation during the second quarter. At the same time, NPA scotched rumors that additional supplies of cobalt would be made available for civilian use during the second quarter.

Boiler, Furnace Trouble . . . Steel production at U. S. Steel's Fairless works, interrupted several weeks ago by blast furnace and boiler trouble, is not expected to be resumed before early April. Though some steel production has been lost, work toward completion of steelmaking and finishing facilities is continuing.

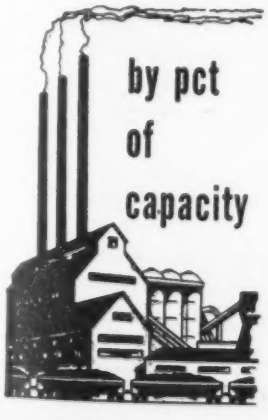
Want Permanent Rail Rate Boost . . . This week railroad spokesmen asked Interstate Commerce Commission to make permanent the 15 pct temporary rate increase authorized last April. The higher rates will expire Feb. 28, 1954, unless extended or made permanent.

Small Structurals Booked Ahead . . . Spokesman of 60-member small structural fabricators association in the Midwest says member companies already have backlogs equal to two-thirds the business handled last year. In 1952 they shipped 300,000 tons of fabricated structural steel. Current orders on the books total more than 200,000 tons. Verbal agreements and promises have many of the mills booked through the third quarter.

Drop Coke Price . . . In the face of a dull market, some producers of foundry beehive coke at Connellsville, Pa., have lowered their price $1 to $16.50 per ton. Price range for beehive coke is now $16.50 to $18.

Build Warehouse . . . Hanna Steel Corp. is building a new steel processing warehouse in Birmingham, Ala., which will specialize in carbon sheet steel and strip products in various sizes. Operation is expected to begin late this fall.

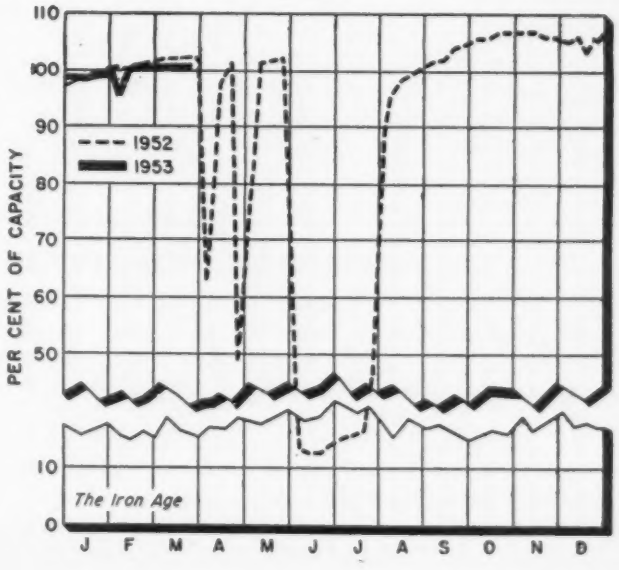
STEEL OPERATIONS



District Operating Rates

District	Week of Mar. 22	Week of Mar. 15
Pittsburgh	106.0	106.0*
Chicago	104.0	103.0
Philadelphia	94.0	94.0*
Valley	103.0	103.0*
West	106.0	108.0*
Cleveland	94.0	93.0*
Buffalo	94.0	94.0
Detroit	105.0	108.0*
Birmingham (South)	98.5	98.5
Wheeling	102.0	102.0*
South Ohio River	88.0	87.5*
St. Louis	88.0	88.0
East	92.0	91.0*
AGGREGATE	100.5	100.5

Beginning Jan. 1, 1953, operations are based on annual capacity of 117,522,470 net tons.
* Revised



NPA Kills Copper Scrap Allocations

M-16 amended to free copper and brass scrap of allocation control . . . Destination still limited . . . Some see cheaper copper by summer but PA's scramble now—By *R. L. Hatschek.*

National Production Authority has removed allocation controls over copper scrap and copper-base alloy scrap, copper-base alloy ingot, blister copper, copper and copper-base alloy shot and waffle, and copper precipitates. This was done in an amendment to M-16 and was effective Mar. 20.

The end of price controls removed the necessity for allocating copper and brass scrap, NPA acknowledges. And the agency predicts that revocation of the allocation controls will encourage greater consumption of copper raw materials produced from scrap. Or maybe they mean this will permit it.

Still Control Destination . . . But order M-16 retains control over these materials as far as providing assurance that they are channeled to the users who customarily consume these grades. All persons not specifically authorized to accept delivery of these materials are still prevented from getting them. For instance, the types of scrap normally used by brass mills must continue to go to brass mills.

Earlier differentiation between foreign and domestic origin copper has been eliminated and allocation is restored to an overall basis without regard to source of supply.

See Cheaper Copper . . . In some circles there are predictions that copper prices this summer will be lower. But lower than what? Market for the red metal is still befuddled with a separate price for almost each and every seller.

Meanwhile, consumers are scrambling for their April allotments. Tickets were scheduled to be in the hands of buyers early this week but the purchasing agents were out beating the brush late last week in an attempt to get the cheapest copper possible. Sooner or later, they'll be getting to the expensive foreign metal and it seems that heavy quantities of that will be needed.

Ship More Ingot . . . Combined total of brass and bronze ingot shipments in February was 25,429 tons. Despite the shorter month, this exceeded the January total of 24,423 tons and was the highest since last October, according to statistics of the Defense Council of the Ingot Brass and Bronze Industry.

Zinc Strengthens . . . A pair of factors have combined to inject a firmer tone into the zinc market. But the firmness is a good way from higher prices as yet. Prices are higher in London and the feeling is transmitted to this side of the Atlantic.

But probably a stronger reason for the current good feeling in zinc circles is that General Services Administration came into the market for stockpile tonnages.

First acquisition was guessed at about 15,000 tons and later a somewhat smaller tonnage was reported purchased by the agency. Price was the going market quotation of 11¢ per lb for Prime Western grade but the tonnages weren't quite large enough to boost the market.

London Lead Firms . . . Also contributing to strength in the U. S. lead market was a bit more firmness in London. The market there late last week was at the c.i.f. New York equivalent of 13.5¢ per lb—exactly the same as the domestic price.

Production of primary lead in the U. S. dipped a bit in February as a result of the short month to 45,423 tons as compared to 47,295 tons in January. But refiners' stocks rose from 52,760 tons at the beginning of the month to 58,949 tons at the beginning of this month.

Secondary Aluminum Climbs . . . Ingot makers last week boosted quotations for secondary aluminum anywhere from ½¢ per lb to 2¢. This resulted from confused scrap prices which are generally a bit higher. Old cast and old sheet aluminum scrap are now selling at 15¢ to 15½¢ per lb and mixed new clippings are at 16½¢ to 17¢.

Give Tax Aid . . . Wheland Co., seventh in the parade of aluminum producers, has been granted a fast tax write-off to cover 85 pct of the $35,450,000 needed to build its aluminum smelter. The plant will have an annual capacity of 50,000 tons of the light metal.

NONFERROUS METAL PRICES

	Mar. 18	Mar. 19	Mar. 20	Mar. 21	Mar. 23	Mar. 24
Copper, electro, Conn.	27.50-34.00	27.50-34.00	27.50-34.00	27.50-34.00	27.50-34.00	27.50-34.00
Copper, Lake, delivered	32.125	32.125	32.125	32.125	32.125	32.125
Tin, Straits, New York	$1.21½	$1.21½	$1.21½	....	$1.21½	$1.21½*
Zinc, East St. Louis	11.00	11.00	11.00	11.00	11.00	11.00
Lead, St. Louis	13.30	13.30	13.30	13.30	13.30	13.30

Note: Quotations are going prices.
*Tentative.

Costs Up

on screw machine parts?

Cut Costs

with Kaiser Aluminum!

If recent price increases in other non-ferrous metals are adding to your raw materials bill for screw machine parts—it's time you specified *aluminum*—Kaiser Aluminum!

Always the least costly non-ferrous metal, aluminum now gives you *an even greater cost advantage.* And, by specifying aluminum for your parts, you are offered more than economy in the price of screw machine stock alone:

1. **Aluminum can save you money because it weighs only ⅓ as much as other commonly used materials and thus will yield more machined pieces per pound.**

2. **Aluminum can save you money on production time and costs because it is free machining, cuts at high speeds and feeds.**

3. **Aluminum can save you money because its recovered scrap has a high value.**

In addition, you probably can produce a better product with aluminum by taking advantage of one or several of its *unique combination of properties,* including: lightness, strength, corrosion resistance, heat and electrical conductivity, heat and light reflectivity and beauty.

Kaiser Aluminum's engineers will be glad to give you their experienced assistance on your questions of alloy selection, design considerations and production techniques.

Prompt deliveries of round and hexagonal aluminum screw machine stock are now being made by us and our distributors. Our local number is listed in your classified telephone directory under the heading "aluminum." Start *now* to profit with aluminum!

Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California

Kaiser Aluminum

setting the pace... in growth, quality and service

Nonferrous Prices

(Effective Mar. 24, 1953)

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188-in., 2S, 3S, 32.9¢; 4S, 61S-O, 34.9¢; 52S, 37.2¢; 24S-O, 24S-OAL, 35.9¢; 75S-O, 75S-OAL, 43.6¢. 0.081-in., 2S, 3S, 34.1¢; 4S, 61S-O, 36.6¢; 52S, 38.9¢; 24S-O, 24S-OAL, 37.2¢; 75S-O, 75S-OAL, 45.7¢. 0.032-in., 2S, 3S, 35.9¢; 4S, 61S-O, 40.6¢; 52S, 43.5¢; 24S-O, 24S-OAL, 45.6¢; 75S-O, 75S-OAL, 57.0¢.

Plate, ¼-in. and Heavier: 2S-F, 3S-F, 30.9¢; 4S-F, 33.0¢; 52S-F, 34.7¢; 61S-O, 33.6¢; 24S-O, 24S-OAL, 35.4¢; 75S-O, 75S-OAL, 42.3¢.

Extruded Solid Shapes: Shape factors 1 to 5, 36.4¢ to 80.3¢; 12 to 14, 37.1¢ to 97.2¢; 24 to 26, 39.7¢ to $1.27; 36 to 38, 47.0¢ to $1.86.

Rod, Rolled: 1.064-in. to 4.5-in., 2S-F 3S-F, 41.0¢ to 36.6¢; cold-finished, 0.375-in. to 3.499-in., 2S-F, 3S-F, 44.2¢ to 38.3¢.

Screw Machine Stock: Rounds, 11S-T3, ⅛ to 11/32-in., 58.4¢ to 45.9¢; ⅜ to 1½-in., 45.3¢ to 42.6¢; 1 9/16 to 3-in., 42.0¢ to 39.3¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374-in., 2S, 43.2¢ to 31.7¢; 52S, 52.4¢ to 38.3¢; 17S-T4, 59.0¢ to 41.0¢; 61S-T4, 52.9¢ to 40.5¢.

Extruded Tubing: Rounds, 63S-T5, OD 1¼ to 2 in., 40.5¢ to 59.0¢; 2 to 4 in., 36.6¢ to 49.7¢; 4 to 6 in., 37.1¢ to 45.3¢; 6 to 9 in., 37.6¢ to 47.5¢.

Roofing Sheet: Flat, per sheet, 0.019-in., 28 x 72 in., $1.247; x 96 in., $1.662; x 120 in., $2.077; x 144 in., $2.494. Coiled sheet, per lb, 0.019 in. x 28 in., 30.8¢; 0.024 in. x 28 in., 29.3¢.

Magnesium

(F.o.b. mill, freight allowed)

Sheet and Plate: FS1-O, ¼ in., 66¢; 3/16 in., 68¢; ⅛ in., 70¢; B & S Gage 10, 71¢; 12, 75¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam ¼ to 0.311 in., 77¢; ½ to ¾ in., 60.5¢; 1¼ to 1.749 in., 56¢; 2½ to 5 in., 51.5¢. Other alloys higher. Base up to ¾ in. diam, 10,000 lb; ¾ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft, for perimeters less than size indicated; 0.10 to 0.11 lb, 3.5 in., 65.3¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 52¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness; OD, ¼ to 5/16 in., $1.43; 5/16 to ⅜ in., $1.29; ½ to ⅝ in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall; OD, ⅝ to ¾ in., 64¢; 1 to 2 in., 60¢; 3 to 4 in., 59¢. Other alloys higher. Base, OD: Up to 1½ in., 10,000 lb; 1½ to 3 in., 20,000 lb; over 3 in., 30,000 lb.

Titanium

(100,000 lb base, f.o.b. mill)

Commercially pure and alloy grades; Sheets and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $6; Forgings, $6.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	86½	67½	92½
Strip, CR	92½	70½	98½
Rod, bar	82½	65½	88½
Angles, HR	82½	65½	88½
Plate, HR	84½	66½	90½
Seamless Tube	115½	100⅓	137½
Shot, blocks		57	

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	47.01		49.08
Copper, h-r	48.98	45.33	
Copper, drawn		46.58	
Low brass	44.89	44.58	
Yellow brass	42.03	41.72	
Red brass	45.91	45.60	
Naval brass	46.31	40.37	41.63
Leaded brass			39.31
Com. bronze	47.46	47.15	
Mang. bronze	50.03	43.92	45.48
Phos. bronze	68.57	68.82	
Muntz metal	44.21	39.77	41.02
Ni silver, 10 pct	55.16	58.84	61.95

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	20.50
Aluminum pig	19.50
Antimony, American, Laredo, Tex.	34.50
Beryllium copper, per lb conta'd Be	$37.72
Beryllium aluminum 5% Be, Dollars Per lb contained Be	$72.75
Bismuth, ton lots	$2.25
Cadmium, del'd	$2.00
Cobalt, 97-99% (per lb)	$2.40 to $2.47
Copper, electro, Conn. Valley	27.50 to 34.00
Copper, Lake, delivered	32.125
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$175 to $185
Lead, St. Louis	13.30
Lead, New York	13.50
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb.	27.00
Magnesium, sticks, 100 to 500 lb.	45.00 to 47.00
Mercury, dollars per 76-lb. flask, f.o.b. New York	$195 to $197
Nickel electro, f.o.b. N. Y. warehouse	63.08
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	56.25
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$90 to $93
Silver, New York, cents per oz.	85.25
Tin, New York	$1.21½
Titanium, sponge	$5.00
Zinc, East St. Louis	11.00
Zinc, New York	11.83
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot	
No. 115	29.50
No. 120	28.75
No. 123	28.00
80-10-10 ingot	
No. 305	35.00
No. 315	32.25
88-10-2 ingot	
No. 210	44.75
No. 215	41.75
No. 245	36.00
Yellow ingot	
No. 405	24.00
Manganese bronze	
No. 421	31.00

Aluminum Ingot

(Cents per lb del'd., 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	25.25-26.50
0.60 copper, max.	25.00-26.00
Piston alloys (No. 122 type)	23.50-24.00
No. 12 alum. (No. 2 grade)	23.00-24.00
108 alloy	23.25-24.50
195 alloy	23.50-24.00
13 alloy (0.60 copper max.)	24.50-25.50
ASX-679	23.50-24.00

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	24.25-26.00
Grade 2—92-95%	23.25-24.50
Grade 3—90-92%	22.50-23.50
Grade 4—85-90%	21.50-23.00

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper	
Cast, oval, 15 in. or longer	45.14
Electrodeposited	37.98
Flat rolled	46.64
Brass, 80-20	
Cast, oval, 15 in. or longer	43.515
Zinc, flat cast	20.25
Ball, anodes	18.50
Nickel, 99 pct plus	
Cast	79.50
Roller, depolarized	80.50
Cadmium	$2.15
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	94⅛

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	30.00
Nickel chloride, 375 lb drum	38.00
Silver cyanide, 100 oz lots, per oz.	75½
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	47.7

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add ⅛¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	27⅛–29⅞	26⅝–29¼
Yellow brass	20⅞–22⅜	19⅛–21¼
Red brass	24 –26¼	23¼–25½
Comm. bronze	22⅝–24⅞	21⅞–24¼
Mang. bronze	19¼–20⅝	18½–19⅝
Brass rod ends	20⅝	

Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	28½
No. 2 copper wire	26½
Light copper	25
•Refinery brass	25

• Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	27
No. 2 copper wire	25
Light copper	23½
No. 1 composition	23
No. 1 comp. turnings	22½
Rolled brass	18
Brass pipe	18
Radiators	17 —17½
Aluminum	
Mixed old cast	15 —15½
Mixed new clips	16½—17
Mixed turnings, dry	14½—15½
Pots and pans	15 —15½

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	25½—26
No. 2 heavy copper and wire	24 —24½
Light copper	22 —22½
New type shell cuttings	22 —22½
Auto radiators (unsweated)	15 —16
No. 1 composition	19
No. 1 composition turnings	18½
Unlined red car boxes	17 —18
Cocks and faucets	16 —17
Mixed heavy yellow brass	13 —13⅛
Old rolled brass	14½—15
Brass pipe	17 —17½
New soft brass clippings	18 —18¼
Brass rod ends	17 —17½
No. 1 brass rod turnings	16½—17

Aluminum

Alum. pistons and struts	6½— 7
Aluminum crankcases	9 —10
2S aluminum clippings	12 —13
Old sheet and utensils	9 —10
Borings and turnings	7½— 8
Misc. cast aluminum	9 —10
Dural clips (24S)	11 —11½

Zinc

New zinc clippings	6⅛
Old zinc	5
Zinc routings	3
Old die cast scrap	4

Nickel and Monel

Pure nickel clippings	58 —60
Clean nickel turnings	58 —60
Nickel anodes	58 —60
Nickel rod ends	58 —60
New Monel clippings	33
Clean Monel turnings	25
Old sheet Monel	30 —32
Nickel silver clippings, mixed	15 —16
Nickel silver turnings, mixed	14 —14⅛

Lead

Soft scrap, lead	10¼—10⅝
Battery plates (dry)	5⅛— 5½
Batteries, acid free	4

Magnesium

Segregated solids	15 —16
Castings	14 —15

Miscellaneous

Block tin	100
No. 1 pewter	70
No. 1 auto babbitt	55 —60
Mixed common babbitt	13½—14
Solder joints	17¼
Siphon tops	60
Small foundry type	17½—18
Monotype	13 —13½
Lino. and stereotype	12 —12½
Electrotype	10¼—10½
Hand picked type shells	8¼— 8½
Lino. and stereo. dross	4½
Electro dross	4

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Can Low Prices Stunt No. 2 Shipments?

Scrap trade awaits lower offerings for No. 2 steel and bundles . . . Some claim not enough will move if prices drop . . . Why weakness developed . . . Demand for quality stays strong.

Reports flourished in several scrap iron and steel centers that No. 2 steel (perhaps) and No. 2 bundles (particularly) would slump $2 below prevailing prices. But scrap men interviewed by THE IRON AGE were unwilling to concede that lower prices would stick —if volume shipments were wanted by the steel mills.

Sure, they said, mill stockpiles have been overburdened with No. 2 material in recent months—but they've worked quite a bit of the surplus off. Meanwhile demand for premium grades shows no signs of sagging. Much of this is going to sweeten the charge for openhearths working at capacity.

Also contributing to weakness in No. 2 bundles is their quality in some areas. Mill inspectors have in the past rejected them, downgraded them, sent nasty letters. And if bundle quality skids the top possible price won't hold.

In some areas No. 2 bundles have slipped below old ceiling prices, accompanied by turnings. Scrap men insist that if prices offered go too low scrap sources won't yield the substantial amounts of bundles that may be needed.

Also reported is determination of some steel people to resurrect No. 1 heavy melting steel as a big tonnage grade. In some areas this week scrap market activity was at half-pace.

Pittsburgh—Market is dull. Mills are apathetic and buying is limited. A large consumer is planning to place orders this week at $2 below prevailing prices for No. 2 steel and No. 2 bundles. Opinion is mixed as to whether much material will move at these prices. Market for better grades of material continues firm. Turnings market is sluggish but prices are unchanged.

Chicago—A large mill bought No. 2 heavy melting at old ceiling price. No. 2 bundles slipped a little. Feeling on railroad grades was increased caution. Electric furnace and cast grades moved in scattered sales. Offers at over ceiling on railroad material were hitting opposition at the consumer level.

Philadelphia—Confusion of where and how to quote No. 1 heavy melting continues. Several sales of No. 2 bundles last week confirmed the previous price. Sales of cupola cast at $44 delivered boosted that grade $1 over last week's price but other cast iron material is lower.

New York—Market was marking time. In a lifeless cast market buying from Burlington and Florence pegged mixed yard cast at $39. Reports of still lower No. 2 prices to come were rampant. Scrap men said a limited movement was possible at lower prices but not a volume shipment. Consumers were reported meeting in New York this week. There may be an attempt by steel people to resurrect No. 1 heavy melting as a real grade. Boiler trouble at Fairless could cut scrap shipments.

Detroit—News that April automotive lists will again be directed indicates that the price of bundles will continue to hold at old ceiling levels, with electrics paying $2 to $2.50 more than openhearths. No Detroit market for heavy turnings and reluctance for other areas to pay the springboard dropped their price sharply. No. 2 bundles also weakened noticeably.

Cleveland—Weakness in the turnings market continued to make news here this week. All items in the Youngstown turnings market dropped $3 while mixed borings and turnings in the Cleveland area fell off $1 to $30. Rumors of a price jump on large automotive lists have apparently been killed by decontrol of steel. Feeling now is that policymakers will keep the lid on these prices. Rejections are reported running at a high level.

Birmingham—The scrap market is dull with little tonnage moving anywhere. Brokers report some small orders are being received and promptly filled. Dealers say scrap is not coming in so plentifully because of cut prices, high freight rates. Farm scrap is drying up.

St. Louis—Brokers' chief goal has been to rush deliveries of steel grades to cover commitments made by mills here. They fear that weakness in No. 2 heavy melting and No. 2 bundles will force prices down. Mills are out of the market and prices are unchanged, but brokers are buying No. 2 grades $2 below ceiling. Machine shop turnings are also off $2. Standard steel car axles are back to ceiling with completion of a conversion deal.

Cincinnati—Dealers and brokers here expect No. 2 grades to drop at least $2 within the next 2 weeks before April buying is completed. General lack of activity in the cast market hit No. 1 cupola cast, decreasing price from $48 to $45 delivered. Random length rails also backed down from $53 to $52. Mills in the area are doing very little buying.

Buffalo—An additional advance of $2.00 a ton was reported on No. 1 heavy melting steel on sales to one of the area's top consumers. No. 1 material, however, is scarce and the limited sales were not reflected by strength in other items. Mills continue to do business on same basis. Cast market is weak with difficulty reported finding outlet for supplies.

Boston—Only price changes this week were hikes in No. 1 heavy melting and No. 1 bundles. Mills are willing to pay the higher prices for good No. 1 heavy because, they say, they never really got No. 1 under OPS. Bundles are up.

West Coast—Low prices and bad weather slowed down incoming scrap to dealers last week. No. 2 grades are weaker in Los Angeles, reflecting the national trend. Regular price remains $26, but isolated sales have been made at $24. In Seattle, new lower prices perked up mill buying slightly, but many deliveries at old prices continue.

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Scrap Prices

(Effective Mar. 24, 1953)

Pittsburgh

No. 1 hvy. melting	$44.50 to $45.00
No. 2 hvy. melting	43.00 to 44.00
No. 1 bundles	44.50 to 45.00
No. 2 bundles	41.00 to 42.00
Machine shop turn.	30.00 to 30.50
Mixed bor. and ms. turns.	30.00 to 30.50
Shoveling turnings	36.00 to 37.00
Cast iron borings	36.00 to 37.00
Low phos. punch'gs, plate	50.00 to 51.00
Heavy turnings	43.00 to 44.00
No. 1 RR. hvy. melting	46.00 to 47.00
Scrap rails, random lgth.	48.00 to 49.00
Rails 2 ft and under	52.00 to 53.00
RR. steel wheels	54.00 to 55.00
RR. spring steel	54.00 to 55.00
RR. couplers and knuckles	54.00 to 55.00
No. 1 machinery cast.	52.00 to 53.00
Cupola cast.	46.00 to 47.00
Heavy breakable cast.	42.00 to 43.00
Malleable	49.00 to 50.00

Chicago

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	42.00 to 43.00
No. 1 factory bundles	44.00 to 45.00
No. 1 dealers' bundles	43.00 to 44.00
No. 2 dealers' bundles	39.00 to 40.00
Machine shop turn.	27.00 to 28.00
Mixed bor. and turn.	27.00 to 28.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	27.00 to 28.00
Low phos. forge crops	49.00 to 51.00
Low phos. punch'gs, plate	47.00 to 48.00
Low phos. 3 ft and under	45.00 to 46.00
No. 1 RR. hvy. melting	46.00 to 47.00
Scrap rails, random lgth.	51.00 to 52.00
Rerolling rails	55.00 to 57.00
Rails 2 ft and under	57.00 to 58.00
Locomotive tires, cut	50.50 to 51.00
Cut bolsters & side frames	49.00 to 51.00
Angles and splice bars	53.00 to 54.00
RR. steel car axles	63.00 to 64.00
RR. couplers and knuckles	51.00 to 53.00
No. 1 machinery cast.	46.00 to 48.00
Cupola cast.	43.00 to 45.00
Heavy breakable cast.	38.00 to 39.00
Cast iron brake shoes	40.00 to 41.00
Cast iron car wheels	45.00 to 46.00
Malleable	45.00 to 46.00
Stove plate	39.00 to 41.00

Philadelphia Area

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	42.50 to 43.50
No. 1 bundles	44.00 to 45.00
No. 2 bundles	40.00 to 41.00
Machine shop turn.	31.50 to 32.50
Mixed bor. and turn.	36.50 to 37.50
Shoveling turnings	36.50 to 37.50
Clean cast chem. borings	41.50 to 42.00
Low phos. 5 ft and under	45.50 to 46.50
Low phos. 2 ft and under	47.50 to 48.50
Elec. furnace bundles	45.50 to 46.50
Drop forge trimmings	41.50 to 42.50
Heavy turnings	42.50 to 43.50
RR. steel wheels	54.00 to 54.50
RR. spring steel	54.00 to 54.50
Rails 18 in. and under	.... 66.00
Cupola cast.	43.00 to 44.00
Heavy breakable cast.	45.50 to 46.50
Cast iron carwheels	47.00 to 49.00
Malleable	49.00 to 50.00
Unstripped motor blocks	35.00 to 36.00
No. 1 machinery cast.	48.00 to 50.00
Charging box cast.	43.00 to 44.00

Cleveland

No. 1 hvy. melting	$43.50 to $44.50
No. 2 hvy. melting	42.50 to 43.50
No. 1 bundles	43.50 to 44.50
No. 2 bundles	40.50 to 41.50
No. 1 busheling	43.50 to 44.50
Machine shop turn.	29.00 to 30.00
Mixed bor. and turn.	29.00 to 30.00
Shoveling turnings	33.00 to 34.00
Cast iron borings	33.00 to 34.00
Low phos. 2 ft and under	49.00 to 50.00
Drop forge flashings	42.00 to 43.00
No. 1 RR. hvy. melting	45.00 to 46.00
Rails 3 ft and under	61.00 to 62.00
Rails 18 in. and under	63.00 to 64.00
Railroad grate bars	40.00 to 41.00
Steel axle turnings	42.00 to 43.00
Railroad cast	49.00 to 50.00
No. 1 machinery cast.	51.00 to 52.00
Stove plate	45.00 to 46.00
Malleable	50.00 to 51.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Youngstown

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	43.00 to 44.00
No. 1 bundles	44.00 to 45.00
No. 2 bundles	41.00 to 42.00
Machine shop turn.	29.00 to 30.00
Shoveling turnings	33.00 to 34.00
Cast iron borings	33.00 to 34.00
Low phos. plate	49.00 to 50.00

Buffalo

No. 1 hvy. melting	$47.00 to $48.00
No. 2 hvy. melting	42.00 to 43.00
No. 1 bushelings	42.75 to 43.50
No. 1 bundles	42.75 to 43.75
No. 2 bundles	41.50 to 42.50
Machine shop turn.	32.50 to 33.00
Mixed bor. and turn.	36.50 to 37.00
Shoveling turnings	36.50 to 37.00
Cast iron borings	36.50 to 37.00
Low phos. plate	48.75 to 49.75
Scrap rails, random lgth.	47.75 to 48.75
Rails 2 ft and under	51.75 to 52.75
RR. steel wheels	50.75 to 51.75
RR. spring steel	50.75 to 51.75
RR. couplers and knuckles	50.75 to 51.75
No. 1 machinery cast.	45.00 to 46.00
No. 1 cupola cast.	42.50 to 43.00

Detroit

Brokers' Buying prices per gross ton, on cars:

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 bundles, openhearth	40.00 to 41.00
No. 2 bundles	36.00 to 37.00
Heavy turnings	34.00 to 35.00
New busheling	39.00 to 40.00
Drop forge flashings	39.00 to 40.00
Machine shop turn.	24.00 to 25.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	26.00 to 27.00
Electric furnace bundles	42.00 to 43.00
Low phos. punch'gs, plate, heavy	46.00 to 46.50
Low phos. punch'gs, plate, light	42.00 to 43.00
No. 1 cupola cast.	.... 47.00
Heavy breakable cast.	.... 44.00
Stove plate	.... 42.00
Automotive cast.	.... 50.00

St. Louis

No. 1 hvy. melting	$41.50 to $42.50
No. 2 hvy. melting	40.50 to 41.50
No. 2 bundled sheets	40.50 to 41.50
Machine shop turn.	28.00 to 30.00
Shoveling turnings	31.50 to 32.50
Rails, random lengths	50.00 to 51.00
Rails 18 in. and under	60.00 to 62.00
Locomotive tires, uncut	45.50 to 46.50
Angles and splice bars	48.50 to 49.50
Std. steel car axles	55.00 to 56.00
RR. spring steel	48.50 to 49.50
Cupola cast.	46.00 to 47.00
Hvy. breakable cast.	38.00 to 40.00
Cast iron brake shoes	41.00 to 42.00
Stove plate	39.00 to 40.00
Cast iron car wheels	47.00 to 48.00
Malleable	42.00 to 44.00
Unstripped motor blocks	35.00 to 36.00

New York

Brokers' Buying prices per gross ton, on cars:

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	35.00 to 36.00
No. 2 bundles	.... 34.00
Low phos. 2 ft and less	.... 42.00
Machine shop turn.	24.50 to 25.50
Mixed bor. and turn.	24.50 to 25.50
Shoveling turnings	28.50 to 29.50
Clean cast chem. borings	32.00 to 33.00
No. 1 machinery cast.	45.00 to 46.00
Mixed yard cast.	.... 39.00
Charging box cast.	39.00 to 41.00
Heavy breakable cast.	39.00 to 41.00
Unstripped motor blocks	31.00 to 32.00

Birmingham

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 bundles	39.00 to 40.00
No. 2 bundles	36.00 to 37.00
No. 1 busheling	39.00 to 40.00
Machine shop turn.	28.00 to 29.00
Shoveling turnings	31.50 to 32.50
Cast iron borings	31.50 to 32.50
Electric furnace bundles	41.00 to 42.00
Bar crops and plate	44.50 to 45.50
Structural and plate, 2 ft.	43.50 to 44.50
No. 1 RR. hvy. melting	40.00 to 41.00
Scrap rails, random lgth.	42.00 to 43.00
Rerolling rails	48.00 to 49.00
Rails, 2 ft and under	48.00 to 49.00
Angles & splice bars	46.00 to 47.00
Std. steel axles	53.50 to 54.50
No. 1 cupola cast.	42.00 to 43.00
Stove plate	38.00 to 39.00
Cast iron car wheels	46.00 to 47.00
Charging box cast.	35.00 to 36.00
Heavy breakable	35.00 to 36.00
Unstripped motor blocks	35.00 to 36.00
Mashed tin cans	24.00 to 25.00

Boston

Brokers' Buying prices per gross ton, on cars:

No. 1 hvy. melting	$36.17 to $37.17
No. 2 hvy. melting	.... 33.17
No. 1 bundles	36.17 to 37.17
No. 2 bundles	.... 31.17
No. 1 busheling	.... 34.17
Machine shop turn.	23.17 to 24.17
Mixed bor. and short turn.	23.17 to 24.17
Shoveling turnings	27.17 to 28.17
Clean cast chem. borings	.... 31.17
Mixed cupola cast.	32.00 to 33.00
Heavy breakable cast.	35.00 to 36.00
Stove plate	32.00 to 33.00
Unstripped motor blocks	.... 28.25

Cincinnati

No. 1 hvy. melting	$43.50 to $44.50
No. 2 hvy. melting	42.50 to 43.50
No. 1 bundles	43.50 to 44.50
No. 2 bundles	42.50 to 43.50
Machine shop turn.	31.00 to 32.00
Mixed bor. and turn.	31.00 to 32.00
Shoveling turnings	34.00 to 36.00
Cast iron borings	34.00 to 36.00
Low phos. 18 in. & under	49.00 to 50.00
Rails, random lengths	51.00 to 52.00
Rails, 18 in. and under	59.00 to 60.00
No. 1 cupola cast.	44.00 to 45.00
Hvy. breakable cast.	38.00 to 40.00
Drop broken cast.	49.00 to 50.00

San Francisco

No. 1 hvy. melting	....	$30.00
No. 2 hvy. melting	....	26.00
No. 1 bundles	....	29.00
No. 2 bundles	....	24.00
Machine shop turn.	....	12.00
Cast iron borings	....	16.00
No. 1 RR. hvy. melting	....	37.00
No. 1 cupola cast.	....	38.00

Los Angeles

No. 1 hvy. melting	....	$30.00
No. 2 hvy. melting	....	26.00
No. 1 bundles	....	29.00
No. 2 bundles	....	24.00
Mach. shop turn.	....	12.00
Shoveling turnings	....	16.00
Cast iron borings	....	16.00
Elec. fur. 1 ft and under	....	33.00
No. 1 RR. hvy. melting	....	37.00
No. 1 cupola cast.	....	39.00

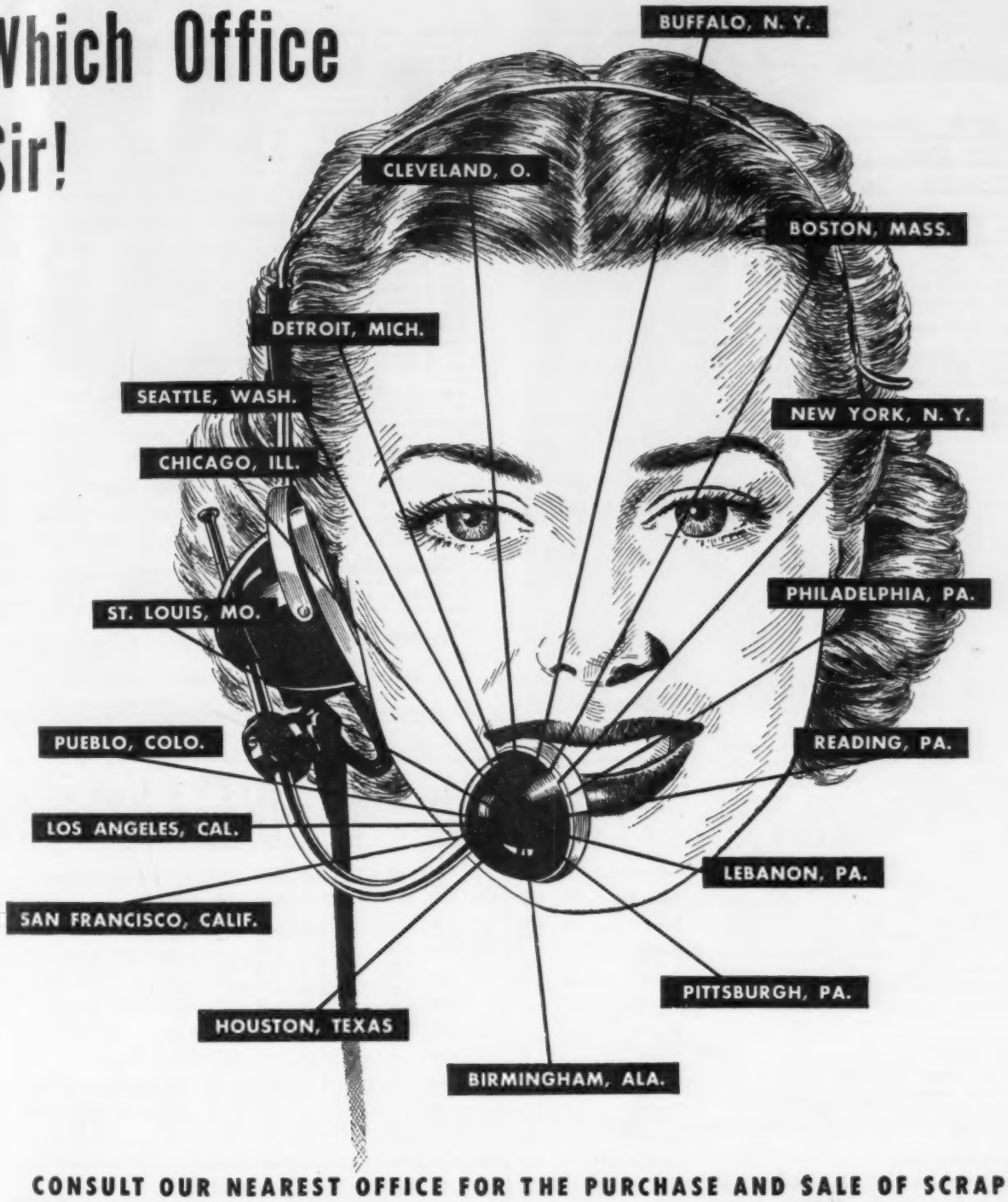
Seattle

No. 1 hvy. melting	....	$30.00
No. 2 hvy. melting	....	26.00
No. 1 bundles	....	29.00
No. 2 bundles	....	24.00
No. 1 cupola cast.	....	37.00
Mixed yard cast.	....	36.00

Hamilton, Ont.

No. 1 hvy. melting	....	$35.50
No. 1 bundles	....	35.50
No. 2 bundles	....	35.00
Mechanical bundles	....	33.50
Mixed steel scrap	....	31.50
Bushelings	....	30.50
Bush., new fact. prep'd.	....	33.50
Bush., new fact. unprep'd.	....	32.50
Short steel turnings	....	32.50
Mixed bor. and turn.	....	32.50
Rails, remelting	....	35.50
Rails, rerolling	....	44.50
Cast scrap	....	50.00

Which Office Sir!



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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices

(Effective Mar. 24, 1953)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type: declines appear in *Italics*.

	Mar. 24 1953	Mar. 17 1953	Feb. 24 1953	Mar.25 1952
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	3.775¢	3.775¢	3.775¢	3.60¢
Cold-rolled sheets	4.575	4.575	4.575	4.35
Galvanized sheets (10 ga)	5.075	5.075	5.075	4.80
Hot-rolled strip	3.725	3.725	3.725	3.50
Cold-rolled strip	5.20	5.20	5.20	4.75
Plate	3.90	3.90	3.90	3.70
Plates wrought iron	9.00	9.00	9.00	7.85
Strains C-R strip (No. 302)	36.75†	36.75†	36.75†	36.75
Tin and Ternplate: (per base box)				
Tinplate (1.50 lb.) cokes	$8.95	$8.95	$8.95	$8.70
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.40
Special coated mfg. ternes	7.75	7.75	7.75	7.50
Bars and shapes: (per pound)				
Merchant bars	3.95¢	3.95¢	3.95¢	3.70¢
Cold finished bars	4.925	4.925	4.925	4.55
Alloy bars	4.675	4.675	4.675	4.30
Structural shapes	3.85	3.85	3.85	3.65
Stainless bars (No. 302)	31.50†	31.50†	31.50†	31.50
Wrought iron bars	10.05	10.05	10.05	9.50
Wire: (per pound)				
Bright wire	5.225¢	5.225¢	5.225¢	4.85¢
Rails: (per 100 lb.)				
Heavy rails	$3.775	$3.775	$3.775	$3.60
Light rails	4.25	4.25	4.25	4.00
Semifinished Steel: (per net ton)				
Rerolling billets	$59.00	$59.00	$59.00	$56.00
Slabs, rerolling	59.00	59.00	59.00	56.00
Forging billets	70.50	70.50	70.50	66.00
Alloy blooms, billets, slabs	76.00	76.00	76.00	70.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.325¢	4.325¢	4.325¢	4.10¢
Skelp	3.55	3.55	3.55	3.35

† Add 4.7 pct to base and extras.

Composite: (per pound)				
Finished steel base price	4.376¢	4.376¢	4.376¢	4.131¢

	Mar. 24 1953	Mar. 17 1953	Feb. 24 1953	Mar.25 1952
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$60.69	$60.69	$60.69	$57.97
Foundry, Valley	55.00	55.00	55.00	52.50
Foundry, Southern, Cin'ti	58.93	58.93	58.93	55.53
Foundry, Birmingham	51.38	51.38	51.38	48.88
Foundry, Chicago†	55.00	55.00	55.00	52.50
Basic del'd Philadelphia	59.77	59.77	59.77	57.00
Basic, Valley furnace	54.50	54.50	54.50	52.00
Malleable, Chicago†	55.00	55.00	55.00	52.50
Malleable, Valley	55.00	55.00	55.00	52.50
Ferromanganese‡	226.25	226.25	226.25	186.25

† The switching charge for delivery to foundries in the Chicago district is $1 per ton.

‡ Average of U. S. prices quoted on Ferroalloy pages.

Composite: (per gross ton)				
Pig iron	$55.26	$55.26	$55.26	$53.72
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$44.75	$44.75	$44.50	$43.00*
No. 1 steel, Phila. area	44.50	44.00	44.00	41.50*
No. 1 steel, Chicago	43.50	43.50	43.50	41.50*
No. 1 bundles, Detroit	40.50	40.50	40.20	41.15*
Low phos., Youngstown	49.50	49.50	48.50	46.50*
No. 1 mach'y cast, Pittsburgh	52.50	52.50	52.50	52.75
No. 1 mach'y cast, Philadel'a.	49.00	49.00	50.50	52.00*
No. 1 mach'y cast, Chicago	*47.00*	47.50	46.00	48.75

* Basing pt., less broker's fee. † Shipping pt., less broker's fee. Delivered prices, including broker's fee, unless otherwise noted.

Composite: (per gross ton)				
No. 1 heavy melting scrap	$44.25	$44.08	$44.00	$42.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.75	$14.75	$14.75	$14.75
Foundry coke, prompt	*17.25*	17.75	17.75	17.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30.75‡	30.75‡	24.50	24.50
Copper, Lake, Conn.	32.125	32.125	24.625	24.625
Tin, Straits, New York	$1.21½†	$1.21½	$1.21½	$1.21¼
Zinc, East St. Louis	11.00	11.00	11.50	10.50
Lead, St. Louis	13.30	13.30	13.30	13.80
Aluminum, virgin ingot	20.50	20.50	20.50	19.00
Nickel, electrolytic	63.08	63.08	63.08	59.58
Magnesium, ingot	27.00	27.00	24.50	24.50
Antimony, Laredo, Tex.	34.50	34.50	34.50	30.00

† Tentative. ‡ Average.

Composite Price Notes

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Scrap Steel Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Warehouse Price Notes

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1)500 to 1499 lb, (2)6000 lb or over, (3)450 to 1499 lb, (4) 2000 to 3999 lb.

WAREHOUSES

Base price, f.o.b., dollars per 100 lb.

Cities	City Delivery Charge	Sheets: Hot-Rolled	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)	Strip: Hot-Rolled	Strip: Cold-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled	Bars: Cold-Finished	Alloy Bars: Hot-Rolled A 4615 As rolled	Alloy Bars: Hot-Rolled A 4140 Annealed	Alloy Bars: Cold-Drawn A 4615 As rolled	Alloy Bars: Cold-Drawn A 4140 Annealed
Baltimore	$.20	5.81	7.17	8.04–8.32	6.42	.....	6.05	6.47	6.41	7.18–7.43	.....	.....	.....	.....
Birmingham	.15	5.80	6.65	7.70[1]	5.80	.....	6.10	5.95	5.80	7.85	.....	.....	.....	.....
Boston	.20	6.45–6.52	7.35–7.71	8.34–8.58	6.55	8.50[2]	6.75–6.80	6.56–6.75	6.42	7.46–7.54	10.85	11.15–11.17	12.85	13.15–13.18
Buffalo	.20	5.77–5.80	6.60–6.65	8.41	6.00–6.21	.....	6.30–6.40	6.08–6.15	5.78–5.80	6.95	10.70	11.00–11.07	12.70	13.00–13.07
Chicago	.20	5.80–5.81	6.65	7.95	5.83–5.84	.....	5.95–6.00	5.95	5.83	6.56–6.80	.....	10.65	.....	12.65
Cincinnati	.15	6.13	6.72	8.26	6.14	.....	6.47	6.42	6.13	7.16	.....	11.07	.....	13.07
Cleveland	.20	5.80–5.81	6.65	8.09	6.00–6.01	.....	6.12–6.17	6.28	5.89	6.66–6.90	.....	10.79	.....	12.79
Denver	.....	7.17–7.39	8.23	9.60	7.43–7.69	8.90	7.37–7.54	7.50–7.80	7.61–7.71	8.24–8.48	.....	.....	.....	.....
Detroit	.20	5.99–6.00	6.81–6.90	8.64	6.13–6.34	7.29–7.85	6.45–6.47	6.42–6.69	6.12–6.47	7.10–7.23	10.72	.....	12.72	12.42–12.92
Houston	.20	6.35–6.74	7.00–7.78	8.67–8.70	6.70–6.95	.....	6.60–6.85	6.60–6.82	6.75–7.00	9.00–9.35	11.90	11.35–11.90	13.60	13.90
Kansas City	.20	6.47	7.31	8.62	6.51	.....	6.62–6.67	6.62	6.50	7.57	.....	11.32	.....	.....
Los Angeles	.20	6.60	8.45	9.55	6.75	9.15	6.65	6.60–6.62	6.60	8.35–8.65	.....	12.05	.....	14.60
Memphis	.10	6.56	7.40	.....	6.98	.....	6.71	6.71	6.59	7.77	.....	.....	.....	.....
Milwaukee	.20	5.97–6.16	6.82	8.12	6.00–6.20	.....	6.12–6.36	6.12–6.31	6.00–6.19	6.83–8.07	.....	10.82	.....	12.82
New Orleans	.15	6.28	7.12	.....	6.32	8.32	6.43	6.43	6.31	7.85	.....	.....	.....	.....
New York	.30	6.11–6.62	7.27–7.41	8.07–8.58	6.56–6.72	8.94	6.60–6.88	6.34–6.70	6.59–6.79	7.46–7.53	10.68–10.74	10.91–11.04	12.67–12.74	12.97–13.04
Norfolk	.20	6.75	.....	.....	7.30	.....	6.65	6.65	6.55	8.30	.....	.....	.....	.....
Philadelphia	.25	6.11	7.13	8.25–8.30	6.45–6.46	.....	6.24–6.28	6.17	6.42	7.45	.....	10.67–10.79	.....	12.79
Pittsburgh	.20	5.80–5.81	6.65	7.95	5.94–5.97	.....	5.95–6.00	5.95	5.83	6.66–6.90	.....	10.65	.....	12.65
Portland	.20	7.80	9.05	9.15–9.75	7.60	.....	7.30	7.30	7.35	9.40	.....	.....	.....	.....
Salt Lake City	.20	8.30	.....	10.90[3]	8.45	.....	7.85	8.00	8.40	9.35[4]	.....	.....	.....	.....
San Francisco	.15	6.90	8.20	9.50	6.75	9.25–9.70	6.75	6.50	6.65	8.40–8.70	.....	12.05	.....	14.60
Seattle	.20	7.16–7.36	8.24–8.84	9.30–9.50	7.45–7.70	.....	7.04–7.19	6.63–6.83	6.88–7.08	9.37–9.42	.....	11.70	.....	13.70
St. Louis	.20	6.10–6.11	6.94–6.95	8.25	6.14	8.27–8.39	6.35–6.40	6.35	6.13	6.96–7.21	10.65	10.95	12.65	12.95
St. Paul	.15	6.47	7.31–7.61	8.61	6.50	.....	6.61–6.66	6.61	6.49	7.32–7.57	.....	11.31	.....	.....

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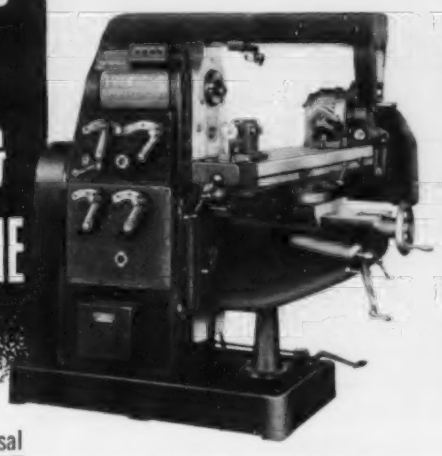

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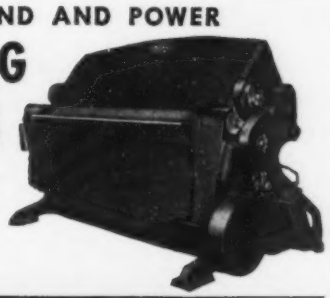

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IRON AGE

STEEL PRICES

(Effective Mar. 24, 1953)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		INGOTS		BILLETS, BLOOMS, SLABS			PIPE SKELP	PIL-ING	SHAPES STRUCTURALS		STRIP			
		Carbon Forging Net Ton	Alloy Net Ton	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Sheet Steel	Carbon	Hi Str. Low Alloy	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy
EAST	Bethlehem, Pa.					$76.00 *B3*			3.90 *B3*	5.80 *B3*				
	Buffalo, N. Y.			$59.00 *B3*	$70.50 *B3, R3*	$76.00 *B3, R3*		4.675 *B3*	3.90 *B3*	5.80 *B3*	3.725 *B3, R3*	5.10 *B3*	5.70 *B3*	7.90 *B3*
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.				$77.50 *A2*	$83.00 *A2*					4.125 *A2*		5.90 *A2*	
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.			$59.00 *B3*	$70.50 *B3*	$76.00 *B3*			3.90 *B3*	5.80 *B3*	3.725 *B3*			
	Newark, N. J.													
	New Haven, Conn.											5.60 *A5* 5.85 *D1*		
	Phoenixville, Pa.								4.95 *P2*					
	Putnam, Conn.													
	Sparrows Pt., Md.										3.725 *B3*	5.10 *B3*	5.70 *B3*	7.90 *B3*
	Worcester, Mass.													
	Trenton, N. J.											6.45 *R4*		
MIDDLE WEST	Alton, Ill.										4.20 *L1*			
	Ashland, Ky.										3.725 *A7*			
	Canton-Massillon, Ohio				$70.50 *R3*	$76.00 *R3* $78.60 *T5*								
	Chicago, Sterling, Ill.			$59.00 *U1*	$70.50 *U1, R3, W8*	$76.00 *U1, R3, W8*		4.675 *U1*	3.85 *U1, W8*	5.80 *U1*	3.725 *A1, W8* 4.725 *N4*	5.35 *A1*		
	Cleveland, Ohio				$70.50 *R3*							5.10 *A5, J3*		7.45 *J3*
	Detroit, Mich.	$56.00 *R5*	$57.00 *R5*		$73.50 *R5*	$79.00 *R5*					4.025 *G3* 4.40 *M2*	5.30 *G3* 5.45 *M2* 5.60 *D1* 6.05 *D2*	6.30 *G3*	8.15 *G3*
	Duluth, Minn.													
	Gary, Ind. Harbor Indiana			$59.00 *U1*	$70.50 *U1*	$76.00 *U1, Y1*		4.675 *I3*	3.85 *I3 U1*	5.80 *I3, U1* 6.30 *Y1*	3.725 *I3, U1, Y1*	5.35 *I3*	5.65 *I3, U1* 6.15 *Y1*	
	Granite City, Ill.													
	Kokomo, Ind.													
	Middletown, Ohio											5.10 *A7*		
	Niles, Ohio Sharon, Pa.										4.225 *S1*	5.70 *T4* 5.80 *S1*	5.65 *S1*	7.30 *S1*
	Pittsburgh, Pa. Midland, Pa.	$54.00 *U1*	$57.00 *U1, C11*	$59.00 *U1,*	$70.50 *U1,*	$76.00 *U1, C11*	3.55 *U1* 3.65 *J3*	4.675 *U1*	3.85 *U1, J3*	5.80 *U1, J3*	3.725, *A7* 3.975 *A3* 4.225 *S7, S9*	5.10 *J3, A7* 5.45 *A3* 5.80 *B4, S7*	7.45 *J3*	
	Portsmouth, Ohio													
	Weirton, Wheeling, Follansbee, W. Va.								4.10 *W3*		3.825 *W3*	5.10 *W3*	6.10 *W3*	7.95 *W5*
	Youngstown, Ohio					$76.00 *Y1, C10*	3.55 *U1* *R3*			6.30 *Y1*	3.725 *U1, Y1, R3*	5.10 *R3, Y1* 5.70 *C5* 5.80 *B4*	5.65 *R3, U1* 6.15 *Y1*	7.30 *R3* 7.80 *Y1*
WEST	Fontana, Cal.	$81.00 *K1*	$83.00 *K1*	$78.00 *K1*	$89.50 *K1*	$95.00 *K1*			4.50 *K1*	6.45 *K1*	5.175 *K1*	6.75 *K1*	6.55 *K1*	
	Geneva, Utah				$70.50 *C7*				3.85 *C7*	5.80 *C7*				
	Kansas City, Mo.								4.45 *S2*		4.325 *S2*			
	Los Angeles, Torrance, Cal.				$89.50 *B2*	$96.00 *B2*			4.45 *C7, B2*	6.35 *B2*	4.475 *C7, B2*	6.85 *C1*	6.40 *B2*	
	Minnequa, Colo.								4.30 *C6*		4.775 *C6*			
	San Francisco, Niles, Pittsburg, Cal.				$89.50 *B2*				4.40 *B2* 4.56 *P9*	6.30 *B2*	4.475 *C7, B2*		6.40 *B2*	
	Seattle, Wash.				$89.50 *B2*				4.50 *B2*	6.40 *B2*	4.725 *B2*		6.65 *B2*	
SOUTH	Atlanta, Ga.										4.275 *A8*			
	Fairfield, Ala. Alabama City, Ala.			$59.00 *T2*	$70.50 *T2*				3.85 *T2, R3*	5.80 *T2*	3.725 *T2, R3*		5.65 *T2*	
	Houston, Texas		$65.00 *S2*		$78.50 *S2*	$84.00 *S2*			4.25 *S2*		4.125 *S2*			

STEEL PRICES

(Effective Mar. 24, 1953)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE	
Hot-rolled 10 ga. & hvyr.	Cold-rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Terne 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Hollowware Enameling 29 ga.	
													Bethlehem, Pa.
4.775 *B3*	4.575 *B3*				5.675 *B3*	6.925 *B3*							Buffalo, N. Y.
										† Special coated mfg terne deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb deduct $2.20 from 1.25-lb coke base box. * COKES: 1.50-lb add 25¢. ELECTRO: 0.50-lb add 25¢; 0.75-lb add 65¢.			Claymont, Del.
													Coatesville, Pa.
4.175 *A2*					5.925 *A2*								Conshohocken, Pa.
													Harrisburg, Pa.
													Hartford, Conn.
									4.325 *B3*				Johnstown, Pa.
													Newark, N. J.
													New Haven, Conn.
													Phoenixville, Pa.
													Putnam, Conn.
4.775 *B3*	4.575 *B3*	5.075 *B3*			5.675 *B3*	6.925 *B3*	7.775 *B3*		4.425 *B3*	$8.80 *B3*	$7.50 *B3*		Sparrows Pt., Md.
									4.625 *A5*				Worcester, Mass.
									4.425 *R4*				Trenton, N. J.
									4.70 *L1*				Alton, Ill.
4.775 *A7*		5.075 *A7*	4.925 *A7*										Ashland, Ky.
		5.075 *R3*											Canton-Massillon, Ohio
4.775 *W8*					5.675 *U1*				4.325 *A5, N4, R3*				Chicago, Sterling, Ill.
4.775 *R3, J3*	4.575 *R3, J3*		4.925 *R3*		5.675 *R3, J3*	6.925 *R3, J3*			4.325 *A5*				Cleveland, Ohio
4.975 *G3*	4.775 *G3*				6.225 *G3*	7.475 *G3*							Detroit, Mich.
													Duluth, Minn.
4.775 *I3, U1, Y1*	4.575 *I3, U1, Y1*	5.075 *I3, U1*	4.925 *U1*	5.475 *U1*	5.675 *I3, U1* 6.175 *Y1*	6.925 *I3, U1* 7.425 *Y1*				$8.70 *U1, I3, Y1*	$7.40 *U1, I3*	6.10 *U1, Y1*	Gary, Ind. Harbor, Indiana
4.30 *G2*	5.275 *G2*	5.50 *G2*	5.625 *G2*								$7.60 *G2*	6.30 *G2*	Granite City, Ill.
		5.475 *C9*											Kokomo, Ind.
	4.575 *A7*		4.925 *A7*	5.475 *A7*									Middletown, Ohio
4.175 *S1*					5.675 *S1*						$7.40 *R3*		Niles, Ohio Sharon, Pa.
4.775 *U1, J3, A7* 4.925 *A3*	4.575 *U1, J3, A7*	5.075 *U1*	4.925 *U1*		5.675 *U1, J3*	6.925 *U1, J3*	7.625 *U1*		4.325 *A5* 4.525 *P6*	$8.70 *U1, J3*	$7.40 *U1, J3*	6.10 *U1*	Pittsburgh, Pa. Midland, Pa.
									4.525 *P7*				Portsmouth, Ohio
4.775 *W3, W5*	4.575 *W3, W5*	5.075 *W3, W5*		5.475 *W3, W5*	6.825 *W3*	7.275 *W3*				$8.70 *W3, W5*	$7.40 *W3, W5*	6.35 *W5*	Weirton, Wheeling, Follansbee, W. Va.
4.775 *U1, R3, Y1*	4.575 *R3, Y1*	5.775 *R1*	4.925 *Y1*	6.05 *E2*	5.675 *R3, U1* 6.175 *Y1*	6.925 *R3* 7.425 *Y1*		5.65 *E2* 5.825 *R1*	4.325 *Y1*	$8.70 *R3*			Youngstown, Ohio
4.825 *K1*	5.675 *K1*				6.775 *K1*	7.875 *K1*			5.125 *K1*				Fontana, Cal.
4.675 *C7*													Geneva, Utah
													Kansas City, Mo.
4.475 *C7*		5.825 *C7*						5.575 *C7*	5.125 *C7, B2*				Los Angeles, Torrance, Cal.
									4.575 *C6*				Minnequa, Colo.
4.475 *C7*	5.525 *C7*	5.825 *C7*							4.975 *C7*	$9.45 *C7*	$8.15 *C7*		San Francisco, Niles, Pittsburg, Cal.
													Seattle, Wash.
													Atlanta, Ga.
4.775 *T2, R3*	4.575 *T2*	5.075 *T2, R3*			5.675 *T2*			4.925 *R3*	4.325 *T2, R3*	$8.80 *T2*	$7.50 *T2*		Fairfield, Ala. Alabama City, Ala.
									4.725 *S2*				Houston, Tex.

STEEL PRICES

(Effective Mar. 24, 1953)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing (To Fabricators)	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfg'rs. Bright
EAST	Bethlehem, Pa.				4.675 *B3*	6.00 *B3*	5.925 *B3*					
	Buffalo, N. Y.	3.95 *B3*, *R3*	3.95 *B3*, *R3*	4.975 *B5*	4.675 *B3*, *R3*	6.00 *B3*, *B5*	5.925 *B3*	3.90 *B3*			5.95 *B3*	
	Claymont, Del.							4.35 *C4*		5.35 *C4*		
	Centreville, Pa.							4.35 *L4*		5.75 *L4*		
	Conshohocken, Pa.							4.35 *A2*	4.95 *A2*		6.20 *A2*	
	Harrisburg, Pa.							6.50 *C3*	6.50 *C3*			
	Hartford, Conn.			5.475 *R3*		6.45 *R3*						
	Johnstown, Pa.	3.95 *B3*	3.95 *B3*		4.675 *B3*		5.925 *B3*	3.90 *B3*		5.25 *B3*	5.95 *B3*	5.225 *B3*
	Newark, N. J.			5.375 *W10*		6.35 *W10*						
	New Haven, Conn.											
	Camden, N. J.			5.375 *P10*		6.35 *P10*						
	Putnam, Conn.			5.475 *W10*								
	Sparrows Pt., Md.		3.95 *B3*					3.90 *B3*		5.25 *B3*	5.95 *B3*	5.325 *B3*
	Worcester, Mass.					6.35 *A5*						5.525 *A5*
	Trenton, N. J.											
MIDDLE WEST	Alton, Ill.	4.50 *L1*										5.45 *L1*
	Ashland, Ky.							3.90 *A7*				
	Canton-Massillon	3.95 *R3*		4.925 *R2*, *R3*	4.675 *R3* 4.72 *T5*	5.99 *T5* 6.00 *R2*, *R3*						
	Chicago, Sterling, Ill.	3.95 *U*, *W8*, *R3* 4.55 *N4*	3.95 *R3* 4.70 *N4*	4.925 *A6*, *B5*, *W8*, *W10*	4.675 *R3*, *U1*, *W8*	6.00 *B5*, *L2*, *R3*, *W8*, *W10* 6.05 *A5*		3.90 *U1*, *W8*	4.95 *U1*	5.25 *U1*	5.95 *U1*	5.225 *A5*, *N4*, *R3* 5.325 *K1* 5.475 *W7*
	Cleveland, Ohio	3.95 *R3*	3.95 *R3*	4.925 *A5*, *C13*		6.00 *C13* 6.05 *A5*	5.925 *R3*	3.90 *R3*, *J3*	4.95 *J3*		5.95 *R3*, *J3*	5.225 *A5*, *C13*, *R3*
	Detroit, Mich.	4.10 *R5* 4.30 *G3*		5.075 *R5*, *P8* 5.175 *P3*	4.825 *R5* 5.025 *G3*	6.15 *R5*, *P8* 6.20 *P3*	6.675 *G3*	4.45 *G3*			6.90 *G3*	
	Duluth, Minn.											5.252 *A5*
	Gary, Ind. Harbor, Crawfordsville, Indiana	3.95 *I3*, *U1*, *Y1*	3.95 *I3*, *U1*, *Y1*	4.925 *L2*, *M5*, *R3*	4.675 *I3*, *U1*, *Y1*	6.90 *L2*, *M5*, *R3*, *R5*	5.925 *I3*, *U1*, 6.425 *Y1*	3.90 *I3*, *U1*, *Y1*	4.95 *I3*	5.25 *U1*	5.95 *I3*, *U1*, 6.45 *Y1*	5.325 *M4*
	Granite City, Ill.							4.60 *G2*				
	Kokomo, Ind.											5.325 *C9*
	Middletown, Ohio											
	Niles, Ohio Sharon, Pa.							4.15 *S1*		5.70 *S1*	5.95 *S1*	
	Pittsburgh, Pa. Midland, Pa.	3.95 *U1*, *J3*	3.95 *U1*, *J3*	4.925 *A5*, *J3*, *W10*, *R3*, *C8*	4.675 *U1*, *C11*	6.00 *C8*, *C11*, *W10* 6.05 *A5*	5.925 *U1*, *J3*,	3.90 *U1*, *J3*	4.95 *U1*	5.25 *U1*	5.95 *U1*, *J3*	5.225 *A5*, *J3* 5.475 *P6*
	Portsmouth, Ohio											5.625 *P7*
	Weirton, Wheeling, Follansbee, W. Va.	4.10 *W3*						3.90 *W5* 4.20 *W3*				
	Youngstown, Ohio	3.95 *U1*, *Y1*, *R3*	3.95 *U1*, *Y1*, *R3*	4.925 *F2*, *Y1*	4.675 *U1*, *C10*, *Y1*	6.00 *C10*, *F2*, *Y1*	5.925 *U1* 6.425 *Y1*	3.90 *U1*, *Y1*, *R3*			5.95 *R3* 6.45 *Y1*	5.225 *Y1*
WEST	Fontana, Cal.	4.65 *K1*	4.65 *K1*		5.725 *K1*		6.975 *K1*	4.55 *K1*		6.20 *K1*	6.65 *K1*	
	Geneva, Utah							3.90 *C7*			5.95 *C7*	
	Kansas City, Mo.	4.55 *S2*	4.55 *S2*		5.275 *S2*							5.825 *S1*
	Los Angeles, Torrance, Cal.	4.65 *C7*, *B2*	4.65 *C7*, *B2*	6.375 *R3*	5.725 *B2*		6.625 *B2*					6.175 *C7*, *B1*
	Minnequa, Colo.	4.40 *C6*	4.75 *C6*					4.70 *C6*				5.475 *C6*
	San Francisco, Niles, Pittsburg, Cal.	4.65 *C7*, *P9* 4.70 *B2*	4.65 *C7*, *P9* 4.70 *B2*				6.675 *B2*					6.175 *C6*, *C7*
	Seattle, Wash.	4.70 *B2*	4.70 *B2*				6.675 *B2*	4.80 *B2*			6.85 *B2*	
SOUTH	Atlanta, Ga.	4.50 *A8*	4.50 *A8*									5.475 *A8*
	Fairfield, Ala. Alabama City, Ala.	3.95 *T2*, *R3*	3.95 *T2*, *R3*				5.925 *T2*	3.90 *T2*, *R3*			5.95 *T2*	5.225 *T2*, *R3*
	Houston, Texas Ft. Worth, Texas	4.35 *S2*	4.35 *S2* 5.05 *T7*		5.075 *S2*			4.30 *S2*				5.625 *S2*

Steel Prices

(Effective Mar. 24, 1953)

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metal Products Co., Youngstown
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia-Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Inc.
C10 Copperweld Steel Co., Glassport, Pa.
C11 Crucible Steel Co. of America, New York
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland

D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.
G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Co., Inc., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh
N2 National Tube Co., Pittsburgh
N3 Niles Rolling Mills Co., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.

O1 Oliver Iron & Steel Co., Pittsburgh

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div. Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co. (John A.), Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sloss Sheffield Steel & Iron Co., Birmingham
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Sweet's Steel Co., Williamsport, Pa.
S11 Seidelhuber Steel Rolling Mills, Seattle

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.
T7 Texas Steel Co. Ft. Worth

U1 United States Steel Co., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh

Y1 Youngstown Sheet & Tube Co., Youngstown

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails Col	Woven Wire Fence 9-15½ ga. Col	Fence Posts Col	Single Loop Bale Ties Col	Twisted Barbless Wire Col	Galv. Barbed Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*†	127	135	...	132	...	144	6.075	6.325
Aliquippa, Pa. *J3*	127	141	...	...	...	148	6.075	6.525
Atlanta *A8*	130	140	...	135	...	149	6.325	6.675
Bartonville *K2*	127	139	140	132	148	148	6.075	6.50
Buffalo *W6*	...	...	...	...	...	...	...	...
Chicago *N4*	127	136	...	132	145	145	6.075	6.375
Cleveland *A6*	...	...	...	...	...	...	...	...
Cleveland *A5*	...	...	...	...	...	...	6.075	6.225
Crawfordsville *M4*	127	138	...	132	...	147	6.175	6.475
Donora, Pa. *A5*	127	133	...	132	142	142	6.075	6.225
Duluth *A5*	127	133	...	132	142	142	6.075	6.225
Fairfield, Ala. *T2*	127	133	...	132	142	142	6.075	6.225
Galveston *D4*	135	...	...	...	...	...	...	...
Houston *S2*	135	147	...	...	...	156	6.475	6.925
Johnstn., Pa. *B3*	127	...	148	...	149	...	...	6.575
Joliet, Ill. *A5*	127	133	...	132	142	142	6.075	6.225
Kokomo, Ind. *C9*	...	...	142	...	...	...	6.175	6.425
Los Angeles *B2*	...	...	...	...	...	...	7.025	...
Kansas City *S2*	139	...	...	144	...	160	6.075	7.125
Minnequa *C6*	132	146	138	137	...	153	6.325	6.70
Moline, Ill. *R3*	...	...	136	...	...	...	...	...
Pittsburg, Cal. *C7*	146	156	...	156	162	162	7.025	7.175
Monessen *P6*	127	138	...	...	147	147	6.075	6.45
Portsmouth *P7*	132	...	...	...	...	...	6.47	...
Rankin, Pa. *A5*	127	133	...	...	142	142	6.075	6.225
So. Chicago *R3*†	127	135	140	132	...	144	6.075	6.325
S. San Fran. *C6*	...	...	...	153	...	167	7.025	7.40
Sparrows Pt. *B3*	129	...	...	134	151	...	...	6.675
Struthers, O. *Y1*‡	...	...	...	...	...	...	6.075	6.475
Torrance, Cal. *C7*	147	...	...	...	...	...	7.025	...
Worcester *A5*	133	...	...	...	...	...	8.375	6.525
Williamsport, Pa. *S10*	...	...	...	...	...	...	...	...

Cut Nails, carloads base $7.80 per 100 lb. (less 20¢ to jobbers) at Conshohocken, Pa. (*A2*) Wheeling, W. Va. (*W5*) $7.80.

† Zinc extra not included on Galv. Merch. Wire.

‡ Struthers Galv. Merch. Wire based on 15¢ Zinc.

STAINLESS STEELS

Base price, cents per lb., f.o.b. mill.

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	15.50	16.50	18.00	17.50	26.75	21.75	23.50	13.50	16.25	13.75
Slabs, billets, rerolling	19.75	21.75	23.75	22.75	34.75	28.25	30.75	17.50	21.50	17.75
Forg. discs, die blocks, rings	36.75	37.00	39.75	38.50	57.25	43.50	48.25	30.00	30.50	30.50
Billets, forging	28.25	28.50	30.75	29.75	44.75	33.75	37.75	23.00	23.50	23.50
Bars, wires, structurals	33.75	34.00	36.50	35.50	53.00	40.00	44.75	27.50	28.00	28.00
Plates	35.75	35.75	38.00	38.00	56.00–56.25	44.00	49.00	28.75	29.75	29.25
Sheets	44.25	44.50	46.50	46.50	61.50	53.00	58.00	39.00	39.50	41.50
Strip, hot-rolled	28.50	30.50	35.00	32.75	52.50	40.00	44.50	25.00	32.75	25.75
Strip, cold-rolled	36.50	39.75	43.50	41.75	63.50	52.00	56.50	32.75	39.50	33.25

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* McKeesport, Pa., *U1;* Washington, Pa., *W2;* (type 316 add 4.5¢) *J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Ft. Wayne, *J4;* Lockport, N. Y., *R4.*

Strip: Midland, Pa., *C11;* Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa. *W2* (type 316 add 4.5¢); W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton-Massillon, O., *R3;* Middletown O., *A7;* Harrison, N. J., *D3;* Youngstown, *C5;* Lockport, N. Y., *S4;* Sharon, Pa., *S1* (type 301 add ¼¢); Butler, Pa., *A7* Wallingford, Conn., *W1.*

Bars: Baltimore, *A7;* Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R3;* Chicago, *U1;* Syracuse, N. Y., *C11:* Watervliet, N. Y., *A3;* Waukegan, *A5;* Lockport. N. Y., *S4;* Canton, O., *T5;* Ft. Wayne, *J4.*

Wires: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1);* Syracuse, *C11;* Bridgeville, *U2.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11.*

Plates: Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Lockport, N. Y., *S4;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3.*

Forged discs, die blocks, rings: Pittsburgh, *C11;* Syracuse, *C11;* Ferndale, Mich., *A3,* Washington, Pa., *J2.*

Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1:* Syracuse, *C11.*

WASHINGTON STEEL—Slightly lower on 300 series except where noted.

Miscellaneous Prices

(Effective Mar. 24, 1953)

PIPE AND TUBING

Base discounts f.o.b. mills. Base price about $280 per net ton.

	BUTTWELD														SEAMLESS					
	½ In.		¾ In		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½–3 In.		3½–4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																				
Sparrows Pt. *B3*	30.5	8.25	33.5	12.25	35.5	15.75	36.5	16.25	37.0	17.25	37.5	17.75	38.0	18.25	.....	.....	.....	.....	.....	.....
Youngstown *R3*	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	.....	.....	.....	.....	.....	.....
Fontana *K1*	19.5	+2.75	22.5	1.25	25.0	4.75	25.5	5.25	26.0	6.25	26.5	6.75	27.0	7.25	.....	.....	.....	.....	.....	.....
Pittsburgh *J3*	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75	24.0	2.25	27.0	5.75	29.0	7.75
Alton, Ill. *L1*	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25	.....	.....	.....	.....	.....	.....
Sharon *M3*	32.5	9.25	35.5	13.25	38.0	16.25	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.25	.....	.....	.....	.....	.....	.....
Pittsburgh *N1*	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	.....	27.0	.....	29.0	.....
Wheeling *W5*	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	.....	.....	.....	.....	.....	.....
Wheatland *W4*	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75	.....	.....	.....	.....	.....	.....
Youngstown *Y1*	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
Indiana Harbor *Y1*	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25	.....	.....	.....	.....	.....	.....
Lorain *N2*	32.5	15.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
EXTRA STRONG PLAIN ENDS																				
Sparrows Pt. *B3*	30.25	9.5	34.25	13.5	36.25	17.0	36.75	17.5	37.25	18.5	37.75	19.0	38.25	19.5	.....	.....	.....	.....	.....	.....
Youngstown *R3*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	.....	.....	.....	.....	.....	.....
Fontana *K1*	19.25	.....	23.25	.....	25.25	.....	25.75	.....	26.25	.....	26.75	.....	27.25	.....	.....	.....	.....	.....	.....	.....
Pittsburgh *J3*	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0	23.75	2.0	27.75	6.5	31.25	10.0
Alton, Ill. *L1*	29.25	8.5	33.25	12.5	35.25	16.0	35.75	16.5	36.25	17.5	36.75	18.0	37.25	18.5	.....	.....	.....	.....	.....	.....
Sharon *M3*	32.25	10.5	36.25	14.5	38.25	17.5	38.75	18.0	39.25	18.5	39.75	19.0	40.25	19.5	.....	.....	.....	.....	.....	.....
Pittsburgh *N1*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75	.....	27.75	.....	31.25	.....
Wheeling *W5*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	.....	.....	.....	.....	.....	.....
Wheatland *W4*	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0	.....	.....	.....	.....	.....	.....
Youngstown *Y1*	32.25	11.5	36.25	15.5	37.75	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	22.5	23.75	4.5	27.75	8.5	31.25	12.0
Indiana Harbor *Y1*	31.25	10.5	35.25	14.5	37.25	17.5	37.75	18.5	38.25	19.5	38.75	20.0	39.25	20.5	.....	.....	.....	.....	.....	.....
Lorain *N2*	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75	4.5	27.75	8.5	31.25	12.0

Galvanized discounts based on zinc, at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb. of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only buttweld and seamless, 1 pt. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 3¾ pts. higher discount. Buttweld jobbers' discount, 5 pct. St. Louis zinc price now 11.0¢.

COKE

	Net-Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	$14.50 to $15.00
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	$16.50 to $18.00
Foundry, oven coke	
Buffalo, del'd	$28.08
Chicago, f.o.b.	24.50
Detroit, f.o.b.	25.50
New England, del'd	26.05
Seaboard, N. J., f.o.b.	24.00
Philadelphia, f.o.b.	23.95
Swedeland, Pa., f.o.b.	23.85
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	25.00
Cleveland, del'd	27.43
Cincinnati, del'd	26.56
St. Paul, f.o.b.	22.50
St. Louis, f.o.b.	26.00
Birmingham, del'd	23.21
Lone Star, Tex., f.o.b.	18.50

ELECTRICAL SHEETS

22 Ga. H-R cut length F.o.b. Mill Cents Per Lb.	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
Beech Bottom *W5*	.....	7.85	9.10	9.90	10.45	11.00	11.70
Brackenridge *A3*	7.35	7.85	9.10	9.90	10.45	11.00	11.70
Granite City *G2*	.....	8.55	9.80	.....	.....	.....	.....
Ind. Harbor *I3*	7.35	7.85	9.10	.....	.....	.....	.....
Mansfield *E2*	7.35	7.85	9.10	9.90	.....	.....	.....
Niles, O. *N3*	7.35	7.85	.....	.....	.....	.....	.....
Vandergrift *U1*	7.35	7.85	9.10	9.90	10.45	11.00	11.70
Warren, O. *R3*	7.35	7.85	9.10	.....	.....	.....	.....
Zanesville *A7*	7.35	7.85	9.10	9.90	10.45	11.00	11.70

CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	$110.30 to $113.80
6 to 24-in., del'd N.Y.	113.50 to 114.50
6 to 24-in., Birmingham	96.50 to 101.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less	$128.00 to $130.00

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	23.93	28.14	23.19	27.21
	2½	12	32.17	37.83	31.19	36.67
	2	12	35.78	42.11	34.69	40.82
	3½	11	44.72	52.65	43.36	51.05
	4	10	55.52	65.31	53.83	63.32
National Tube	2	13	22.81	27.94	22.23	.....
	2½	12	31.28	38.31	30.51	.....
	3	12	35.87	43.93	34.98	.....
	3½	11	42.56	52.12	.....	.....
	4	10	54.02	66.16	.....	.....
Pittsburgh Steel	2	13	.....	28.58	.....	.....
	2½	12	32.16	39.19	.....	.....
	3	12	36.87	44.93	.....	.....
	3½	11	43.76	53.32	.....	.....
	4	10	.....	67.68	.....	.....

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Bl. Furnace Silvery
Bethlehem *B3*	56.50	57.00	57.50	58.00	.....	.....
Birmingham *R3*	50.88	51.38	.....	.....	.....	.....
Birmingham *W9*	50.88	51.38	.....	.....	.....	.....
Birmingham *S5*	50.88	51.38	.....	.....	.....	.....
Buffalo *R3*	54.50	55.00	55.50	.....	.....	.....
Buffalo *H1*	54.50	55.00	55.50	.....	.....	66.75
Buffalo *W6*	54.50	55.00	55.50	.....	.....	.....
Chicago *I4*	54.50	55.00	55.00	55.50	.....	.....
Cleveland *A5*	54.50	55.00	55.00	55.50	59.50	.....
Cleveland *R3*	54.50	55.00	55.00	.....	.....	.....
Daingerfield, Tex. *L3*	50.50	51.00	51.00	.....	.....	.....
Duluth *I4*	54.50	55.00	56.00	55.50	.....	.....
Erie *I4*	54.50	55.00	55.00	55.50	.....	.....
Everett, Mass. *M6*	.....	59.50	60.00	.....	.....	.....
Fontana *K1*	60.50	61.00	.....	.....	.....	.....
Geneva, Utah *C7*	54.50	55.00	.....	.....	.....	.....
Granite City, Ill. *K3*	56.40	56.90	57.40	.....	.....	.....
Hubbard, Ohio *Y1*	54.50	55.00	55.00	.....	.....	.....
Jackson, Ohio *J1,G1*	.....	.....	.....	.....	.....	65.50
Minnequa *C6*	56.50	57.50	57.50	.....	.....	.....
Monessen *P6*	56.50	.....	.....	.....	.....	.....
Neville Island *P4*	54.50	55.00	55.00	55.50	.....	.....
Pittsburgh *U1*	54.50	.....	.....	55.50	.....	.....
Sharpsville *S3*	54.50	55.00	55.00	55.50	.....	.....
Steelton *B3*	56.50	57.00	57.50	58.00	62.50	.....
Swedeland *A2*	58.50	59.00	59.50	60.00	.....	.....
Toledo *I4*	54.50	55.00	55.00	55.50	.....	.....
Troy, N. Y. *R3*	56.00	57.00	57.50	.....	62.50	.....
Youngstown *Y1*	54.50	55.00	55.00	55.50	.....	.....
N. Tonawanda, N. Y. *T1*	.....	55.00	55.50	.....	.....	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct, except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery Iron: Add $1.50 per ton net for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. $1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferrosilicon prices are $1 over comparable silvery iron.

C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT				
	0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Bridgeport, Conn. *S7*	5.80	7.65	8.25	10.20	12.50
Carnegie, Pa. *S9*	.....	7.65	8.25	10.20	12.50
Cleveland *A5*	5.10	7.30	8.25	10.20	12.50
Detroit *D1*	6.45	7.50	8.10	.....	.....
New Castle, Pa. *B4*	5.80	7.65	8.25	10.20	.....
New Haven, Conn. *D1*	6.70	7.60	8.20	.....	.....
Sharon, Pa. *S1*	5.80	7.65	8.25	10.20	12.50
Trenton, N. J. *R4*	.....	7.95	8.55	10.50	12.80
Warren, Ohio *T4*	6.20	7.65	8.25	10.20	12.50
Wairton, W. Va. *W3*	5.80	7.65	8.25	10.20	12.50
Worcester, Mass. *A5*	5.40	7.60	8.55	10.50	12.80
Youngstown *C5*	.....	7.65	8.25	10.20	12.50

* Sold on Pittsburgh base.

—Miscellaneous Prices—

(Effective Mar. 24, 1953)

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer *U1*	3.775	4.25	4.925	....	....	....	....
Chicago *R3*	....	....	....	6.65	....	....	....
Cleveland *R3*	....	....	....	....	....	....	....
Ensley *T2*	3.775	4.25	....	....	....	....	....
Fairfield *T2*	....	4.25	....	6.65	....	4.775	....
Gary *U1*	3.775	4.25	....	....	....	4.775	....
Ind. Harbor *I3*	3.775	....	4.925	6.65	....	4.775	....
Johnstown *B3*	....	4.25	....	....	....	....	....
Joliet *U1*	....	4.25	4.925	....	....	....	....
Kansas City *S2*	....	....	....	....	....	....	....
Lackawanna *B3*	3.775	4.25	4.925	....	....	4.775	....
Lebanon *B3*	....	....	....	6.65	....	....	....
Minnequa *C6*	3.775	4.75	4.925	6.65	....	4.775	9.85
Pittsburgh *R5*	....	....	....	....	....	....	....
Pittsburgh *O1*	....	....	....	....	....	....	....
Pittsburgh *P5*	....	....	....	....	....	....	....
Pittsburgh *J3*	....	....	....	6.65	....	....	....
Pitt'g, Cal. *C7*	....	....	....	....	....	4.925	....
Seattle *B2*	....	....	....	7.15	....	4.925	....
Steelton *B3*	3.775	....	4.925	....	....	4.775	....
Struthers *Y1*	....	....	....	6.65	....	....	....
Torrance *C7*	....	....	....	....	....	4.925	....
Youngstown *R3*	....	....	....	6.65	....	....	....

TOOL STEEL

F.o.b. mill

Add 4.7 pct to base and extras.

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.505
18	4	1	—	5	$2.13
18	4	2	—	—	$1.65
1.5	4	1.5	8	—	31.0¢
6	4	2	6	—	36.5¢

High-carbon chromium ..... 63.5¢
Oil hardened manganese ..... 35¢
Special carbon ..... 32.5¢
Extra carbon ..... 27¢
Regular carbon ..... 22¢

Warehouse prices on and east of Mississippi are 3.5¢ per lb. higher. West of Mississippi, 5.5¢ higher.

CLAD STEEL

Add 4.7 pct to base and extras.

	Plate	Sheet
Stainless-carbon		
No. 304, 20 pct.		
Coatesville, Pa. *L4*	*29.5	
Washington, Pa. *J2*	*29.5	
Claymont, Del. *C4*	*29.50	
Conshohocken, Pa. *A2*		*27.50
New Castle, Ind. *I2*	*29.77	*26.24
Nickel-carbon		
10 pct Coatesville, Pa. *L4*	32.5	
Inconel-carbon		
10 pct Coatesville, Pa. *L4*	40.5	
Monel-carbon		
10 pct Coatesville, Pa. *L4*	33.5	
No. 302 Stainless copper stainless, Carnegie, Pa. *A4*		77.00
Aluminized steel sheets, hot dip, Butler, Pa., *A7*		7.75

* Includes annealing and pickling, or sandblasting.

ELECTRODES

Cents per lb, f.o.b., plant threaded electrodes with nipples, unboxed

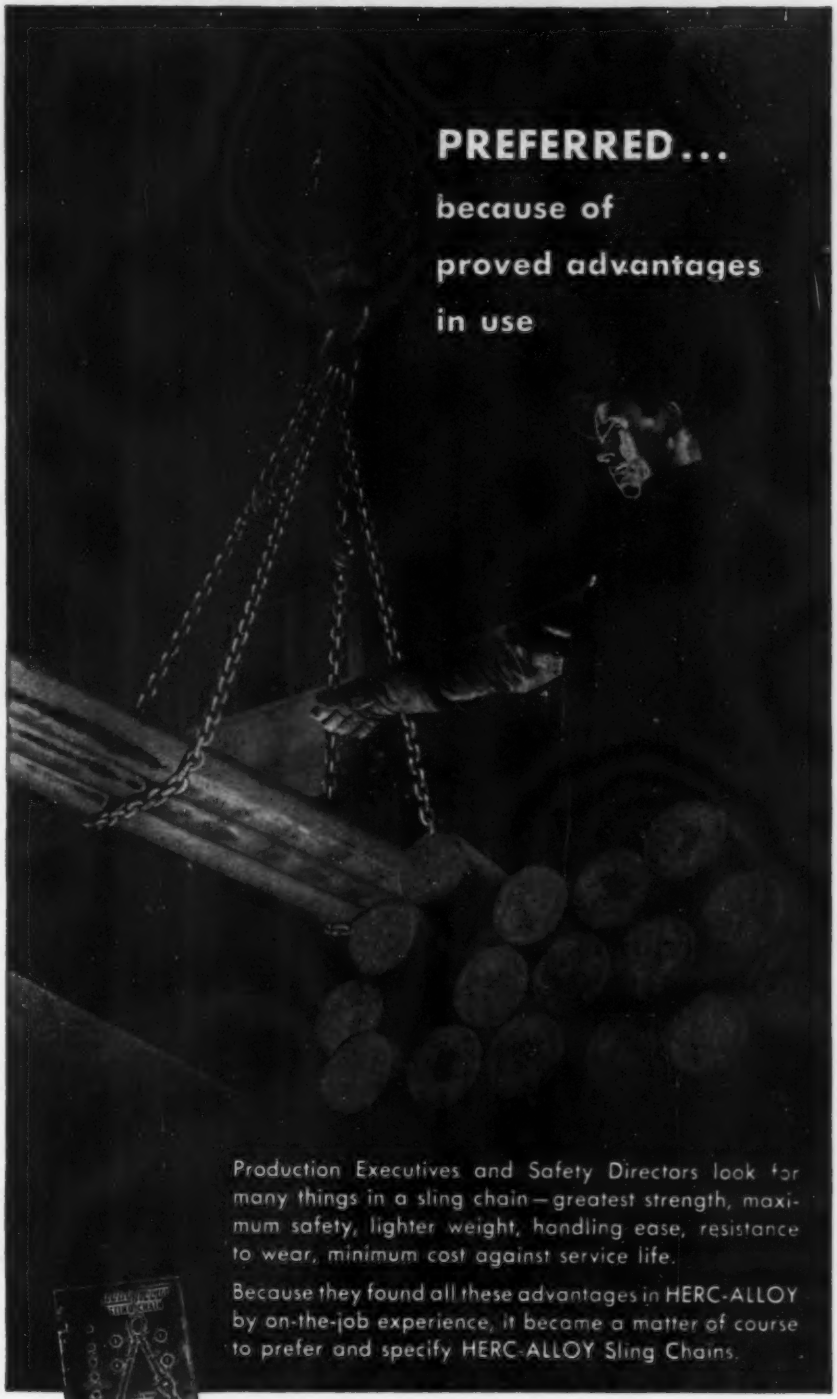
Diam. in in.	Length in in.	Cents Per lb.
	GRAPHITE	
24	84	18.70
17, 18, 20	60, 72	18.70
8 to 16	48, 60, 72	18.70
7	48, 60	20.50
6	48, 60	21.95
4, 5	40	22.63
3	40	23.68
2½	24, 30	24.26
2	24, 30	26.57
	CARBON	
40	100, 110	8.45
35	85, 110	8.45
30	65, 84, 110	8.45
24	72 to 104	8.45
20	84, 90	8.45
17	60, 72	8.45
14	60, 72	9.02
10, 12	60	9.30
8	60	9.58

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill. Price, net ton; Effective CaF_2 content:

70% or more $42.00
60% or less 40.00

HERC-ALLOY
SLING CHAINS



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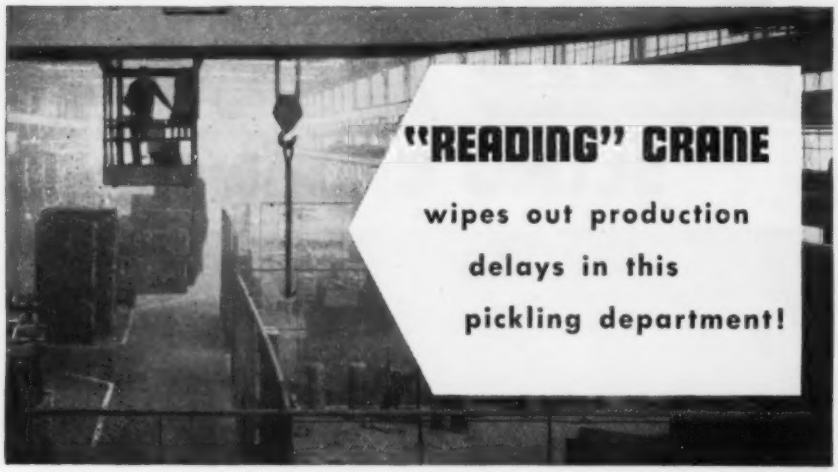

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NEW YORK • SAN FRANCISCO

—Miscellaneous Prices—

(Effective Mar. 24, 1953)

BOLTS, NUTS, RIVETS, SCREWS

Consumer, Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Nuts, Hot Pressed, Cold Punched—Sq.

Pct Off List

	Less Keg Reg.	K.	Less Keg Hvy.	K.
½ in. & smaller	15	28½	15	28½
9/16 in. & ⅝ in.	12	25	6½	21
¾ in. to 1⅛ in. inclusive	9	23	1	16½
1⅛ in. & larger	7½	22	1	16½

Nuts, Hot Pressed—Hexagon

½ in. & smaller	26	37	22	34
9/16 in. & ⅝ in.	16½	29½	6½	21
¾ in. to 1⅛ in. inclusive	12	25	2	17½
1⅛ in. & larger	8½	23	2	17½

Nuts, Cold Punched—Hexagon

½ in. & smaller	26	37	22	34
9/16 in. & ⅝ in.	23	35	17½	30½
¾ in. to 1⅛ in. inclusive	19½	31½	12	25
1⅛ in. & larger	8½	23	2	17½

Nuts, Semi-Finished—Hexagon

	Reg.		Hvy.	
½ in. & smaller	35	45	28½	39½
9/16 in. & ⅝ in.	23	35	17½	30½
¾ in. to 1½ in. inclusive	24	36	15	28½
1⅝ in. & larger	13	26	8½	23
		Light		
7/16 in. & Smaller	35	45		
½ in. thru ⅝ in.	28½	39½		
¾ in. to 1½ in. inclusive	26	37		

Stove Bolts *Pct Off List*

Packaged, steel, plain finished 48—10
Packaged, plain finish ..... 31—10
Bulk, plain finish** 62*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets *Base per 100 lb*

½ in. & larger $7.85

Cap and Set Screws

(In bulk) *Pct Off List*

Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright	54
¾ in. thru 1 in. up to & including 6 in.	48
¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat	46
¾ in. thru 1 in. up to & including 6 in.	41
Milled studs	35
Flat head cap screws, listed sizes	16
Fillister head cap, listed sizes	34
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	53

Machine and Carriage Bolts

Pct Off List

	Less Case	C.
½ in. & smaller x 6 in. & shorter	15	28½
9/16 in. & ⅝ in. x 6 in. & shorter	18½	30½
¾ in. & larger x 6 in. & shorter	17½	29½
All diam. longer than 6 in.	14	27½
Lag, all diam. x 6 in. & shorter	23	35
Lag, all diam. longer than 6 in.	21	33
Plow bolts	34	..

—Miscellaneous Prices—

(Effective Mar. 24, 1953)

REFRACTORIES

Fire Clay Brick	*Carloads, per 1000*
First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.25)	$99.30
No. 1 Ohio	93.40
Sec. quality, Pa., Md., Ky., Mo., Ill.	93.40
No. 2 Ohio	83.15
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.60)	14.40

Silica Brick	
Mt. Union, Pa., Ensley, Ala.	$99.30
Childs, Pa.	103.95
Hays, Pa.	105.10
Chicago District	122.40
Western Utah	116.55
California	122.85
Super Duty, Hays, Pa., Athens, Tex., Chicago	116.65
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	17.30
Silica cement, net ton, bulk, Hays, Pa.	19.60
Silica cement, net ton, bulk, Ensley, Ala.	18.45
Silica cement, net ton, bulk, Chicago District	18.45
Silica cement, net ton, bulk, Utah and Calif	25.95

Chrome Brick	*Per Net Ton*
Standard chemically bonded Balt., Chester	$86.00
Burned, Balt., Chester	80.00

Magnesite Brick	
Standard Baltimore	$109.00
Chemically bonded, Baltimore	97.50

Grain Magnesite	*St. ¾-in. grains*
Domestic, f.o.b. Baltimore in bulk fines removed	$64.40
Domestic, f.o.b. Chewalah, Wash., in bulk	38.00
in sacks	43.70

Dead Burned Dolomite	
F.o.b. producing points in Pennsylvania, West Virginia and Ohio per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢	$13.75

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective Apr. 1, 1953

	Gross Ton
Openhearth lump	$10.95
Old range, bessemer	10.10
Old range, nonbessemer	9.95
Mesabi, bessemer	9.85
Mesabi, nonbessemer	9.70
High phosphorus	9.70

After adjustments for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 31, 1952, in Lake vessel rates, upper Lake rail freights, dock handling charges and taxes thereon.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron e.l.f. New York, ocean bags	10.9¢
Canadian sponge iron, del'd. in East	12.0¢
Domestic sponge iron, 98+% Fe, carload lots	15.5¢ to 17.0¢
Electrolytic iron, annealed, 99.5+% Fe	44.0¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	60.0¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	53.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe	83.0¢ to $1.48
Aluminum	31.5¢
Brass, 10 ton lots	30.00¢ to 33.25¢
Copper, electrolytic	10.75c plus metal value
Copper reduced	10.00¢ plus metal value
Cadmium, 100-199 lb.	85¢ plus metal value
Chromium, electrolytic, 99% min., and quantity, del'd	$3.50
Lead	7.5¢ to 12.0¢ plus metal value
Manganese	57.0¢
Molybdenum, 99%	$2.75
Nickel, unannealed	85.0¢
Nickel, annealed	95.0¢
Nickel, spherical, unannealed	92.0¢
Silicon	38.5¢
Solder powder	7.0¢ to 9.0¢ plus met. value
Stainless steel, 302	83.0¢
Stainless steel, 316	$1.10
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh)	$6.00
Zinc, 10 ton lots	23.0¢ to 30.5¢

A-1037

Above: For charging blast furnace.

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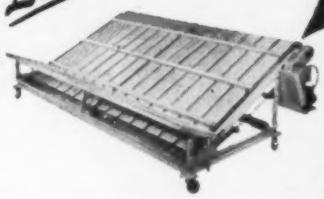
makes sheet handling wholly mechanical

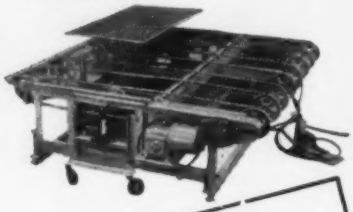


Automatically picks up cut strips, conveys them beyond shear bed. Makes shear 100% efficient. Adjustable to any height up to 45"—synchronous to shear speed—handles any gauge sheet up to ⅜", widths as wide as allowable by standard 20" back gauge, lengths to size of shear. Portable! Caster-supported carriage supplied with floor locks.

SHEAR TO .005"

FRIED Liftveyor

Patented



Enables clean-cut wide shearing to .005" *regardless of material.* Eliminates flexing—supports sheet from underside while sheet edge is against back gauge—then conveys it beyond shear frame. For sheet or plate up to ⅜" thick.

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—Ferroalloy Prices—

(Effective Mar. 24, 1953)

Ferrochrome
Contract prices, cents per pound, contained Cr, lump size, bulk in carloads delivered. (65-72% Cr, 2% max. Si.)

0.36% C	34.50	0.20% C	33.50
0.10% C	34.00	0.50% C	33.25
0.15% C	33.75	1.00% C	33.00
2.00% C			32.75
65-69% Cr, 4-9% C			34.75
62-66% Cr, 4-6% C, 6-9% Si			35.60

S. M. Ferrochrome
Contract price, cents per pound, chromium contained, lump size, delivered.
High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	25.85
Ton lots	28.00
Less ton lots	29.50

High-Nitrogen Ferrochrome
Low-carbon type: 67-72% Cr, 0.75% N
Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal
Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C	$1.13
0.50% max. C	1.14
9 to 11% C	1.11

Low Carbon Ferrochrome Silicon
(Cr 34-41%, Si 42-49%, C 0.05% max.)
Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 25.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.
Bulk 1-in. x down, 25.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

Calcium-Silicon
Contract price per lb of alloy, dump delivered.
30-33% Ca, 60-65% Si, 3.00% max. Fe

Carloads	19.00
Ton lots	22.10
Less ton lots	23.60

Calcium-Manganese—Silicon
Contract prices, cents per lb of alloy lump, delivered.
16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	20.00
Ton lots	22.30
Less ton lots	23.30

CMSZ
Contract price, cents per lb of alloy, delivered.
Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.
Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	20.75
Less ton lots	22.00

SMZ
Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ¼ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50

V Foundry Alloy
Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5; 38-43% Cr, 17-19% Si, 8-11% Mn.

Ton lots	16.50
Less ton lots	17.75

Graphidox No. 4
Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.00
Ton lots to carload packed	19.00
Less ton lots	20.50

Ferromanganese
78-82% Mn, maximum contract base price, gross ton, lump size.

F.o.b. Niagara Falls, Alloy, W. Va., Ashtabula, O.	$235
F.o.b. Johnstown, Pa.	227
F.o.b. Sheridan, Pa.	235
F.o.b. Etna, Clairton, Pa.	233
F.o.b. Philo, Ohio	235

Add $2.50 for each 1% above 82% Mn, subtract $2.50 for each 1% below 78% Mn.
Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	13.45
Ton lots, packed	14.05

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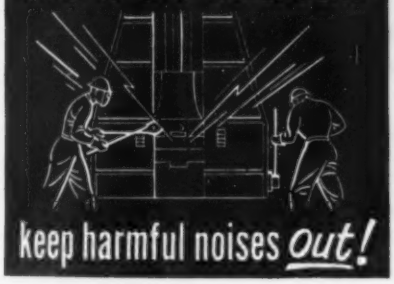

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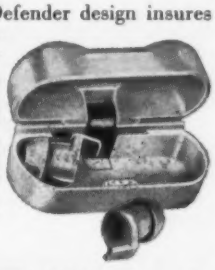

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Pittsburgh 8, Pa.

Ferroalloy Prices

(Effective Mar. 24, 1953)

Spiegeleisen

Contract prices gross ton; lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$34.00	$35.00
Pgh. or Chicago	34.00	35.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	36.95
Ton lots	38.45

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	30.00
Ton lots	32.00
Less ton lots	34.00 to 37.00
Premium for hydrogen-removed metal	1.50

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	28.45	30.30	31.50
0.07% max. C	27.95	29.80	31.00
0.15% max. C	27.45	29.30	30.50
0.30% max. C	26.95	28.80	30.00
0.50% max. C	26.45	28.30	29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45	25.30	26.50

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ..... 21.35¢

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.

Carload bulk	11.40
Ton lots	13.05
Briquet, contract basis carlots, bulk delivered, per lb of briquet	12.65
Ton lots, packed	14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $95.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00. Add $1.055 per ton for each additional 0.50% Si up to and including 17%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	18.00
97% Si, 1% Fe	18.50

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk	6.95
Ton lots	8.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

25% Si	20.00	75% Si	14.30
50% Si	12.40	85% Si	15.55
90.95% Si			17.00

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

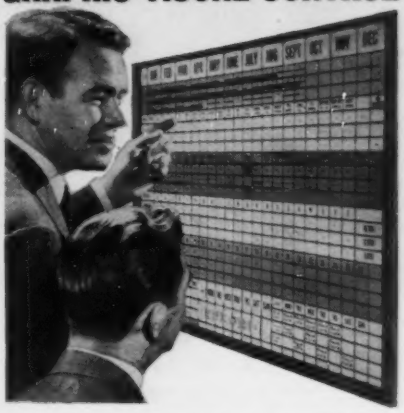
	Cast	Turnings	Distilled
Ton lots	$2.65	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrovanadium

35-55% contract basis, delivered, per pound, contained V.

Openhearth	$3.00-$3.10
Crucible	3.10- 3.30
High speed steel (Primos)	3.20- 3.25

GRAPHIC VISUAL CONTROL



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Ferroalloy Prices

(Effective Mar. 24, 1953)

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.
Carloads 9.90
Ton lots 11.30

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.15

Ferrocolumbium, 50-60% 2 in. x D contract basis, delivered per pound contained Cb.
Ton lots $4.90
Less ton lots 4.95

Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta $3.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo. $1.32

Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton $65.00
10 tons to less carload $75.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti..... $1.35

Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots 1.55

Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $177.00

Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. $4.95

Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. $1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.13

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound
Carload, bulk lump ..... 14.50¢
Ton lots, bulk lump ..... 15.75¢
Less ton lots, lump ..... 16.25¢

Vanadium Pentoxide, 86 - 89% V_2O_5 contract basis, per pound contained V_2O_5 ..... $1.38

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
Ton lots ..... 21.00¢

Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.
Carload, bulk ..... 7.00¢

Boron Agents

Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B.... $5.25

Bortam, f.o.b. Niagara Falls
Ton lots, per pound ..... 45¢
Less ton lots, per pound.... 50¢

Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.
Ton lots, per pound ..... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots.... $1.20
F.o.b. Wash., Pa.; 100 lb up
10 to 14% B ..... .85
14 to 10% B 1.20
19% min. B 1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.
No. 1 ..... $1.00
No. 6 ..... 68¢
No. 79 ..... 56¢

Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd
Ton lots $1.46
Less ton lots 1.57

Nickel - Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered
Less ton lots $1.30

Silcaz, contract basis, delivered.
Ton lots ..... 45.00¢

Producers Pare Stamping Costs

Modern Coil Handling Equipment Widens Use of Low Cost Coil Stock

The battle to keep down costs is going well for producers of stampings. Coil stock and modern coil handling equipment are the decisive factors. Coil stock, with only two scrap ends to its entire length is far more economical than strips of straight stock with two scrap ends to every ten feet. Moreover, the type of coil loading and handling equipment built by F. J. Littell Machine Co. makes coil stock easier to handle than straight stock. Stamping producers are taking full advantage of these developments. Coil stock and Littell Coil Hooks, Reels, Straightening Machines and Automatic Roll Feeds are in wider use today than ever before.

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. . . Littell Hooks make it a simple matter to unload coils on delivery, and to load reels. The variety of sizes have lifting capacities from 1,000 to 40,000 pounds.

Two Types of Reels . . .

Littell Coil Cradle Reels mount heavy coils, up to 40,000 pounds. Spindle Reels handle coils up to 10,000 pounds. Each type is available in plain or motor driven designs.

Straighteners Flatten Stock... Removing curvature from coil stock as it passes from reel to punch press die is the function of Littell Straightening Machines. All models are the same basic design. Variation is in the number and diameter of straightening rollers employed . . . from 1" to 90" in width, and from .010" to .125" thickness.

Automatic Roll Feeds . . . Press output in many shops has been multiplied five times by simply attaching Littell Roll Feeds to presses for blanking, draining, piercing, or cut-off work. The Littell Roll Feed is used with compound dies, single station dies, and progressive dies. Standard models are easily attached, serve all types of presses, and handle all standard widths and thicknesses of stock.

Descriptive details and prices on Littell Hooks, Reels, Straighteners and Roll Feeds are available on request. Inquiries are given immediate attention when addressed to

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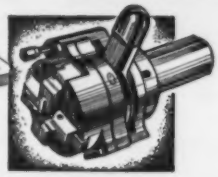

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1	940	Whse.	QM	230	140/170
1	900	Whse.		250	450/550
1	600	Al. Ch.		250	400/800
1	500	Whse.	CC-216	600	300/900
2	450	Whse.		550	415
1	400	G.E.	MCF	550	300/1050
2	300	Whse.	CB-5094	230	575/1150
1	200/300	G.E.	MPC	230	360/920
1	200	Rel.	1970T	230	720
1	200	Whse.	CB-5113	230	400/800
1	150	Whse.	CB-3073	230	575/1150
1	150	G.E.		600	250/750
1	150	Cr. Wh.	65H	230	1150
10	150	Cr. Wh.	93H-TEFC	230	960
1	150	Whse.	SK-151B	230	900/1800
1	150	Whse	SK-201	230	360/950
1	50/120	G.E.	MCF	230	250/1000
2	100	Whse.	SK-181	230	450/1000
1	100	G.E.	CDP-115	230	1750

MILL & CRANE

1	50	G.E.	CO-1810	230	725
2	30	G.E.	MD-104½AA	550	700
1	20	Whse.	K-5	230	975
4	15	Whse.	K-5	230	630
2	10	C.W.	SCM-AH	220	1150
1	10	G.E.	MD-104	230	400/800
3	6.25	Whse.	K-3	230	680
4	3	C.W.	SCM-FF	230	1750
2	3	Whse.	HK-2	230	835

A.C. MOTORS

3 phase—60 cycle

SLIP RING

Qu.	H.P.	Make	Type	Volts	Speed
1	1800	G.E.	MT-498	2300	360
1	1500	ABB		2300	720
1	1200	G.E.	MF-26	2300	275
2	1000	A.C.	Mill	2300	240
1	500	Whse.	CW	550	350
1	500	G.E.	IM	440	900
1	500	G.E.	M-574-Y	6600	900
1	400	Whse.	CW	440	514
1	400	Whse.	CW-1218	2200	435
1	350	G.E.	MT-442Y	2200/4000	253
2	300	G.E.	MT-565Y	2300	900
1	300	A.C.	3-Brg	440	585
1	300	Al. Ch.		440	505
1	250	G.E.	MT-424-Y	4000	257
1	250	G.E.	MT-559S	2200	1800
1	250	Al. Ch.		550	600
1	200	Cr. Wh.	26QB	440	505
1	200	G.E.	IM-17	440	600
1	200	G.E.	IM	440	435
1	200	G.E.	MTP	440	1170
1	150(unused)	Whse.	CW	2300	435
1	150	G.E.	IM-16	440	600
3	125	A.C.		440	865
1	125	Al. Ch.		440	720
4	125	G.E.	MT-566Y	440/2200	435
1	100	G.E.	IM	440	609
5	100	A.C.	ANY	440	695
1	100	G.E.	IM-16	2200	435
1	100	Whse.	CW-868A	440	700

SQUIRREL CAGE

2	650	G.E.	FT-559BY	440	3570
2	450	Whse.	CS-1420	2300/4150	354
1	300	G.E.	IK-17	440	580
1	200	G.E.	IK	440	865
2	200	G.E.	KT-557	440	1800
1	150	Whse.	CS-856S	440	880
1	150	Whse.	CS	440	580
1	150/75	G.E.	IK	440	900/450
2	125	Al. Ch.	ARW	2200	1750
1	125	G.E.	KF-6328-Z	440/2200	3585
1	125	Whse.	MS	440	485

SYNCHRONOUS

2	3500	G.E.	TS	2300	257
3	2100	G.E.	ATI	2300	360
2	1750	G.E.	ATI	2300	3600
2	2000	Whse.		2300	120
8	735	G.E.	ATI	2200/12000	600
1	450	Whse.		2200	450
2	350	G.E.	TS	2200	156

M-G Sets — 3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
1	2000	G.E.	500	600	11000
1	2000	G.E.	514	600	6600/13200
3	1500	G.E.	514	250	6600/13200
1	1500	G.E.	720	600	6600/13200
1	1500	G.E.	360	275	4400
1	1500	G.E.	600	600	4160
2	1000	Whse.	900	600	4160
1	1000	G.E.	900	250	6600
1	1000(3U)	G.E.	900	250	3300
1	750	Whse.	900	275	4160
1	500	G.E.	720	125	2300
1	500	Whse.	900	125/250	440
1	500	Whse.	900	250	6600/13200
1	500	Whse.	1200	125/250	2300
1	400	Whse.	1200	250	2300
1	400(3U)	Cr. Wh.	1200	125/250	2300
1	350	G.E.	900	125	2300/4160
1	150	Whse.	1200	275	2300
1	140(3U)	Cr. Wh.	690	125/250	440/2300
1	100	Delco	1200	120/240	2300
1	100	G.E.	1170	125	220/440

FREQUENCY CHANGER SETS

Qu.	KW	Make	Freq.	Voltages
1	3000	G.E.	25/60	2300/2300/4000
2	2500	G.E.	25/62.5	2300/2300
1	1000	G.E.	25/58.3	4400/2300
1	500	Al. Ch.	2560	11000/2300

BELYEA COMPANY, INC.
47 Howell Street, Jersey City 6, N. J.

The Clearing House

NEWS OF USED AND REBUILT MACHINERY

Concerned About Slump . . . Decontrol had no immediate effect on used machinery business in the Cleveland area. Dealers are still primarily concerned about the sluggishness of the market during the first quarter.

Estimates on how much sales have slumped varied. Concensus was that the business pace was off almost 50 pct from last year's first quarter and there were no signs of better times ahead.

Won't Predict Pickup . . . Although the prophets of doom haven't taken over completely, most Cleveland dealers refuse to predict that business will pick up.

They feel the unsettling effects of the momentary lag in defense buying and the uncertainty of the international situation make it impossible to lay plans with any degree of assurance.

Will Still Be Short . . . Despite predictions that late model machinery would come into the market as soon as defense spending tapered off, most dealers feel that they will still be caught short on turret lathes, engine lathes, radial drills and other critical items.

A few of these machine tools have been hitting the market because some dealers failed to gage the stiffness of buyer resistance in the area. When dealers decided decontrol wouldn't dent the dollar-concious market, a few late models came out of hiding.

Government Competes . . . Most Cleveland dealers believe their chances of eventually getting more desirable machinery will be partially stymied by government buying.

The accelerated shell program has cushioned the market drop to a certain extent during the last month. Decontrol is also expected to provide some help since it means the end of a lot of red tape and will give dealers a higher profit margin on some types of equipment.

Need for better workmanship is emphasized by many Cleveland rebuilders who say production men are in some instances visiting shops to check on rebuilding standards.

More for Defense . . . Recent proposal that $20 billion be spent to improve U. S. air defense could, if adopted, bring about a firming of the used market. The effect could be direct, by increasing demand for used tools to carry out the program, or indirect, by tightening up the availability of new machine tools.

Suggestion that $20 billion be spent to prepare the U. S. for possible enemy air attacks was made by the Massachusetts Institute of Technology which has been conducting a continuous study designed to guide defense officials.

How to Spend It . . . Top Air Force planners are debating whether the $20 billion should be spent on defensive devices such as additional radar stations and warning systems, or for strategic bombers capable of striking back at enemy bases.

If the Air Force decides to push the M.I.T. proposal, it seems probable that its recommendation to the Defense Dept. will be a compromise, with part of the expenditure being earmarked for bomber production, and the rest slated for a build-up of defense devices.

Hold Auction Sale . . . Industrial Plants Corp. is holding a used machinery auction sale at 10:30 am, Apr. 2 at Buehler, Inc., on Route 17, Paramus, N. J. Machinery can be inspected from Mar. 27 to sale date.

Featured units at the auction will be: Cincinnati milling machines, Blanchard and Cincinnati grinders, Warner & Swasey turret lathes, Natco and Avey drills, an Excello Borematic, Wiedemann turret punch, and a wide range of dies and welding equipment. Many other units are also included.

CONSIDER GOOD USED EQUIPMENT FIRST

AIR COMPRESSORS
16" & 11" x 14" Sullivan WJ-3 Air Compressor 885 CFM. Driven by 150 H.P. Westinghouse Syn. Motor 440/3/60
21"x13"x14" Gardner-Denver HAF 1545 cu. ft. Horizontal, 2-stage, Duplex 110# Pressure Complete with 250 H.P. G.E. A.C. Motor NEW 1943

BALER
Logemann Model 7-PH Baler, Complete with Pump & Motor, Chamber 60" long x 16½" wide x 18" deep. Finished bundles 16½" x 6", aver. 60 to 90#

BAR TURNING MACHINE
Medart HF-3 Bar Turning Machine, Capacity 1" to 2½". Complete with Accessories

BENDING ROLLS
12'x¾" Niles Bement Pond Pyramid Type Bendg. Roll
10'x1¼" Hilles & Jones Pyramid Type Bending Roll
20'x1" Southwark Pyramid Type Bending Roll
30'x1" Southwark Pyramid Type, Motor Driven

BORING MILL—VERTICAL
62" Niles-Bement-Pond Vertical Boring Mill 30" Bar Travel, 40" Height under tool

BRAKE—LEAF TYPE
16' x ¾" Dreis & Krump Size No. 249 Leaf Type Bending Brake. Complete with 40 HP GE 220/440/3/60 1465 RPM.

CHARGING MACHINE
6000 lb. Brosius Floor Type Gasoline Driven Charging Machine, Equipped with Peel, Buda Gasoline Engine, Rubber Tires

CRANE—GANTRY
5 ton Whiting Two Leg Gantry Crane 52' Span Cab Control Motors 220 v. 3 ph. 60 cy.

CRANE—LADLE
75 ton Morgan Ladle Crane 49'6" Span 4-Girder Construction, with 25 Ton Auxiliary, Complete with Motors for 230 Volt D.C.

CRANES—OVERHEAD ELECTRIC TRAVELING
5 ton Robbins Myers 28'6" Span 220/3/60
5 ton Bedford 52' Span 220/3/60 A.C.
7½ ton Shepard Niles 80' Span 440/3/60 A.C.
10 ton P&H 77' Span 230 Volt D.C.
Equipped with 2 hooks spaced 11' apart
10 ton Erie 60' Span 440/3/60 A.C.
15 ton Bedford 37'7" Span 220/3/60
With 5 ton Aux. Hoist
20 ton Bedford 50' Span 220/3/60
25 ton Morgan 47'10" Span 230 Volt D.C.
25 ton P & H 60' Span 440/3/60 A.C.
With 5 ton Auxiliary Hoist
30 ton Case 48'7" Span 230 Volt D.C.
With 5 ton Auxiliary
125 ton Cleveland 64'6" Span 220 Volt D.C.
With 2 Trolleys 62½ Ton & 10 Ton Aux.

DIEING MACHINES
75 ton Henry & Wright High Speed Dieing Machine Double Roll Feed, Scrap Cutter, 3" Stroke
100 ton Henry & Wright Dieing Machine, 4" Stroke, 13" Shut Height, Complete Elecl. Equip.

DRAW BENCHES
15,000# United Draw Bench, Motor Driven. Will Draw Tube 31 ft. long
50,000# Standard Double Draw Bench, Complete with 100 H.P. G.E. A.C. Motor & Starter. Will draw rod 56 ft. long

FLANGING MACHINE
¾" McCabe Pneumatic Flanging Machine, Pneumatic Holddowns

FORGING MACHINE
5" Forging Machine — Heavy Duty Steel Frame Suspended Header and Gripper Slides 30 HP. GE 220/3/60 Motor & Starter Factory Rebuilt with Standard Air Clutch.

FORGING MACHINES
1½", 2", 3", 4", 5", Ajax
1", 2", 3", 5" Acme
5 Ajax—Air Clutch

FOUNDRY EQUIPMENT
No. 413-9 Osborn Molding Machine—NEW 1949
American Wheelabrator Cabinet for cleaning external surfaces of pipe 2" to 30" Dia. Complete with accessories and electrical equipment

FURNACE—ANNEALING
Furnace Engr. Co. Bell Type Annealing Furnace Gas Fired Oping. Space 40"x40" Round, 500 CFM Cap.

FURNACES—HEATING
30 ton per hr. Morgan Continuous Pusher Type Billet Heating Furnace, Hearth 20' x 49', Complete with Electrical Equipment
NEW Oil Fired Surface Combustion Furnace, Inside width 3', Length 13', Opening 3", 4340 lb per hour net work to 2200° F.
60 KW Leeds & Northrup Homo Furnace #9478-UB-28. With controls. Work space 28" dia. x 28" deep

FURNACES—MELTING
1000 lb. Model "U" Stroman Tilting Type Melting Furnace, Oil Fired
15 ton Heroult Model V-12 Top Charge Hydraulically Operated. Complete with Transformer Equip.
20 ton Moore Size "NT" Melting Furnace—NEW With 7500 KVA GE Transformer 13,200 volt, 3 phase, 60 cycle

GEAR REDUCERS
500 H. P. United Combination Reduction Gear & Pinion Stand. Gear Ratio 8.581:1
600 H.P. Farrel Birmingham. Size 13 Reduction Gear. Ratio 720 to 244 RPM
700 H.P. Falk Single Reduction Gear. Ratio 375 to 200 RPM
1800 H.P. Mesta Gear Reduction Unit, Ratio 19:1

HAMMERS—BOARD DROP
800 lb. Chambersburg Model J-2
1200, 1600, lb. Chambersburg
1000, 3000 lb. Billings & Spencer

HAMMER—COUNTER BLOW TYPE
35 ton Counter Blow Drop Forge Hammer, Steam or Air Operated

HAMMERS—STEAM DROP
2000, 2500 lb. Chambersburg
1500 lb. Erie

HAMMERS—STEAM FORGING
1200 lb. Massillon Single Frame
1500, 1600, 2000, 3000, 4000, 6000 lb. Chambersburg
600, 1500, 2500 lb. N.B.P.
600, 1100, 1500, 2000, 2500, 3500, Erie

HAMMERS—MISCELLANEOUS
No. 6N Nazel Hammer, Geared Motor Drive
300 lb. Bradley Compact Hammer, Arr. for Motor Drive with 10 H.P. A.C. Motor
2000 lb. Chambersburg Pneumatic Hammer, Complete with Elecl. Equip. New 1951
48" x 86" Chambersburg Cecostamp Hammer

LEVELERS—ROLLER
48" Newbold Roller Leveler, Motor Driven, 11 Rolls 5" Dia.
72" Sutton Roller Leveler 17 Rolls 2⅝" Backed-up
78" McKay Roller Leveler 17 Rolls 5-3/16"
83" Hilles & Jones Roller Leveler, Motor Driven, 15 Rolls 6" Dia.

LEVELER—STRETCHER
12' Aetna Standard Plate Stretcher Leveler

MOTORS
1250 H.P. Westinghouse Induction Motor 6600 volt 3 phase 60 cycle 593 R.P.M.
2000 H.P. General Elec. Induction Motor 6600 volt 3 phase 60 cycle 600 R.P.M.
2500 H.P. General Elec. Direct Current Motor 6600 volt 175/350 R.P.M.

NAIL MAKING MACHINES
No. 1½ National—Sizes 10D, 12D, 16D, 20D, 30D
No. 3 National—Size 6D
No. 2 Glader—Sizes 6D, 7D, 8D, 9D
Angell—Sizes 10D, 12D, 16D, roofing

PLANER—ROTARY
15" Espen-Lucas Column Facer, Belt Driven

PLATE DUPLICATOR
Thomas Machine Co. Plate Duplicator 150 Ton Table area for 6' x 20' plates

PRESS—EXTRUSION
1200 ton Horizontal Extrusion Press, 3-Column Type Ram 34" Diameter, Suitable for billets 6" dia. x 22" long

PRESSES—HYDRAULIC
Model BL-350 Milwaukee Hydraulic Briquetting Press Complete with Pumps, Capacity Grey Iron Briquettes 3½ ton per hr.
75 ton Williams & White Hydr. Straightening Press Stroke 16", Gap 27", Complete with Pump & Motor
200 ton Bliss Hydrodynamic 48" Stroke Bed Area 24" x 24", Hyd. Pump Incl.
500 ton Southwark Hydraulic 24" Stroke, 78" Daylight Platen 64" R to L x 32" F to B
500 ton Southwark Open Throat Hydraulic Press 12" Stroke Plate 56" x 56"
700 ton Elmes Forming Press, 27" Stroke, 30" Dia. Ram, Platen 40" x 88" with overhang 40" x 129", Complete with Pump and Motor

PRESS—HYDRAULIC WHEEL
100 ton Elmes Inclined Hydr. Wheel Press 72" Between Parallel Bars, Complete with Pump and Motor

PRESS—KNUCKLE JOINT
#27 Bliss Knuckle Joint Embossing & Coining Press 1000 ton Capacity, 2½" Stroke, 18" Shut Height

PRESSES—STRAIGHT SIDE
No. 3 Ferracute Super Speed Punch Press 30 ton Capacity. NEW 1946—never used
No. 620 Bliss High Production Press, 1½" Stroke
SI-40 Verson 200 ton Press, 30" Stroke, Bed Area 40" x 44"

PRESSES—TRIMMING
1500 ton Hydraulic Bending & Trimming Press, Distance between columns 86" x 86"
2500 ton Hydraulic Bending & Trimming Press, Distance between columns 90" x 108"

PUNCHES—MULTIPLE
Williams & White Multiple Punch, Motor Driven. Capacity 60 holes 13/16" thru 7/16"
Cleveland 500 ton, 128", Multiple Punch, M.D.

PUNCH & SHEAR COMBINATIONS
No. 4½ UD Buffalo Universal Ironworker. Motor Driven. With Built-in Notcher, NEW 1946, Capacities: Punch 1 9/16" thru 1¼" Shear, Rounds 3", Squares 2¾", Angles 6x6x⅞", etc.
Pels Model KBL New Improved Punch & Shear Built-in Coper and Notcher, Capacity Punch 1" thru ⅞", Shear Rounds 1⅝", 1½" Squares, 4x4x⅝" Angles
Style EF Cleveland Single End Punch & Shear, M.D. Capacity Punch 1" thru 1¼"

RIVETER
100 ton Hanna Air Riveter, 150" Reach, 24" Gap. Capacity 1⅛" and 1¼" rivets

ROLL—PLATE STRAIGHTENING
7 Roll Bertsch Plate Straightening Machine, Capacity 10' x ¾", Complete Elecl. Equip.

ROLLING MILLS
7½" Steckel Four High Rolling Mill, Max. Steel Width 6", Work Rolls 2½" x 7½", Complete with electrical equipment
8"x10" Two Stand Two High, Comp. Elecl. Equip.
12"x16" Single Stand Two High, Comp. with Elecl. Equip.
12"x24" Waterbury Farrel Two High
15"x30" Measberg Single Stand Two High
18"x24" Waterbury Farrel Two Stand Two High
20"x30" Two Stand Two High Rolling Mill
20"x36" Poole Two Stand Two High
21"x76" Philadelphia Single Stand Two High
22"x40" Single Stand Two High
24"x56" United Two High Roughing Mill
28"x60" Single Stand Two High
18"x60" Three High Roughing Mill, Complete with billet heating furnace and accessory equipment incl. elecl. equip.

SAWS
No. 749 Espen-Lucas Heavy Duty Cold Saw, Capacity up to and incl. cakes or slabs 48" x 7" Stroke 72", Motor Driven
No. 3 Ryerson Friction Saw, 54" Blade Hydraulic Feed, Complete with Elecl. Equip.

SHEAR—ALLIGATOR
No. 7 Thomas Carlin Alligator Shear, 16" Blade 30 H.P., D.C. Motor

SHEAR—ANGLE
Hilles & Jones No. 2 Double Angle Shear, M.D. Capacity 6" x 6" x ⅞"

SHEAR—BILLET
Pels Billet Shear, Belted Motor Drive. Capacity Cold 8⅝" Round, 8" Square

SHEARS—GATE
90" x ½" Birdsboro Shear with Table & Stacker —LATE
96" x ⅝" Bertsch Gate Shear, Motor Driven
10' x ½" Pexto Shear, Motor Driven

SHEAR—MISCELLANEOUS
United Oil Hydraulic Up-Cut Shear Complete with Pump, Motor and Tank. 38" Knives, 8" Stroke. Pressure Between Knives 360,000# at oil pressure of 2000# per sq. in.

SHEARS—ROTARY
No. 60 Quickwork Rotary Shear, ⅝" Capacity
No. 100 Kling Rotary Shear, 1" Capacity
Quickwork Heavy Duty Circle Shear, ⅝" Capacity. Complete with Circle Cutting Attachment
No. 25A Quickwork Whiting Rotary Shear, ¼" Capacity, with Circle Cutting Attachment. Motor Driven

SHEAR—SQUARING
12'x3/16" Stamco Steel Squaring Shear. Motor Dr.

SLITTERS
16" Torrington Slitter. Motor Driven. Complete with Coiler & Accessories
18" Slitter. Motor Driven. Complete with Expanded Pay-Off Reel and Recoiler
24" Torrington Heavy Duty Slitter. Capacity 5 cuts ½" mild steel
No. 1225A Bliss Slitter, Motor Driven. NEW 1950. Capacity 38" wide x 16 cuts of .010" to 6 cuts of .025"
72" Yoder Gang Slitter. Capacity 5 cuts 20 Ga.
76" Mesta Slitter. Complete with Mesta Feed Reel. Mesta Upcoiler and Elecl. Equip.

STRAIGHTENERS
No. 3 Medart Three Roll Rotary Straightener Capacity 1" to 3½" low carbon solid steel bars or up to 4½" OD pipe or tubing Extra Set of Rolls and Yokes Included. Timken Bearings—New 1950.
#1B Sutton Round Straightening Machine Capacity 3/16" to ¾" OD Tubing Top Rolls Friction Driven Motor Driven Including Electrical Equipment. New 1947.

STRAIGHTENER
Haliden 8-Roll Strip Straightener & Cutting Machine. Capacity 12" wide 11 Ga. Sheet Steel

STRETCHER
McKay Hydraulic Bar Stretcher. Capacity up to 1¾" dia. in length 12' to 27'

SWAGING MACHINE
No. 154 Etna Capacity Tubing 1½", Solids ¾" Complete with Motor and Starter

TESTING MACHINE
300,000 lb SOUTHWARK-EMERY Universal Hydraulic Testing Machine. Three 16" Dial Gauges.
Ranges 0-300,000 lb
0-150,000 lb
0-50,000 lb
Factory Rebuilt and Calibrated.

THREAD ROLLER
Model "C" Watson Flagg Precision Thread Roller Capacity up to 3", Incl. Accessories & Electrical Equipment

WELDERS
200 KVA Progressive Universal Seam Welder 220 volt, 60 cycle, 18" Throat, Extra Welding Head, Complete G.E. Control Panel
250 KVA Progressive Model A-6 Flash Welder 140 volt 60 cycle. Mechanical Contactor Hi-Pressure Clamp Assembly—NEW 1949

WIRE EQUIPMENT
Type A—4-22" Block Morgan Connor Continuous Wire Drawing Machine. Starting Size .187", Finish .073" to .110"
Type B—6-16"/22" Block Morgan Connor Continuous Wire Drawing Machine. Starting Size .127"-.187". Finish .034" to .067"

• Manufacturing • RITTERBUSH & COMPANY, INC. • Equipment •
50 CHURCH ST., NEW YORK CITY 8
Telephone Cortlandt 7-3437

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Liquidations—Bona Fide Auction Sales Arranged

Consulting Engineering Service
Surplus Mfg. Equipment Inventories Purchased

MILES' QUALITY

AIR COMPRESSOR, 21"x13"x16" Worthington
AUTOMATIC, 20"x25" Fay (1942)
AUTOMATIC, 8" Bullard Mult-Au-Matic, 6-spindle
AUTOMATIC, 6-spindle Baird chucker
AUTOMATIC, 3¼" x 3¾" Cleveland "A"
AUTOMATIC, 1¼" Conomatic 8 spdl.
AUTOMATIC, 2¼" & 3½" Conomatic 4 spdl.
BORING MILL, 4" Detrick & Harvey, horiz. floor type
BRAKE, 8' Cincinnati, 65 ton, press
BROACH, No. 1 Foote Burt duplex surface
BROACH, 12 ton No. V2 American Vertical
BROACH, 15 ton H1048 American horizontal, 1946
BROACH, 15 ton 36" stroke Colonial vertical surface
BROACH, No. 3XA Oilgear horizontal hydraulic
BROACH, V42 American hydraulic, 18 ton
BULLDOZER, No. 22 Williams & White
COMPARATOR, 20" Portman Optical
DRILL, Nos. 217, 321 Baker
DRILL, No. 36 HD Baker hydraulic
DRILL, 21" & 24" Cincinnati, upright
DRILL, 12-spindle No. 12 Natco
DRILL, 12-spindle No. 10 Defiance rail type
DRILL, No. B 250 H Natco multiple
DRILL, 36-spindle Baush, adjustable spindle
DRILL, RADIAL, 3½', 8" American sensitive
GEAR HOBBER, 72" Westinghouse
GEAR HOBBER, No. 12H G&E
GEAR HOBBER, No. 130 Cleveland Rigidhobber
GEAR HOBBER, No. 3 Adams Farwell
GEAR HOBBERS, No. 12 Barber Colman
GEAR HOBBERS, type A Barber Colman
GEAR HOBBERS, Nos. 1 and 25 5A Lees Bradner
GEAR SHAVER, 12" Red Ring, 1946
GEAR TESTER, No. 13 Gleason
GRINDERS, CENTERLESS, Two No. 2 Cincinnati
GRINDERS, 10"x36" Norton Semi-Auto
GRINDER, DISC, 30", No. 8 Badger
GRINDER, DISC, No. 120 Gardner opposed, 1946
GRINDER, DISC, No. 228 Hanchett opposed
GRINDER, GEAR, 10" Pratt & Whitney
GRINDER, Internal, Bryant Nos. 5, 16A, 16-2B & 24-36
GRINDERS, INTERNAL, Nos. 72A3 and 72A5 Heald
GRINDER, SURFACE, No. 7B Wilmarth & Morman
HAMMER, Nos. 5N & 6B Nazel pneumatic
HAMMER, 40 lb. Bradley helve
HONE, Nos. 172 & 2610 Barnes hydraulic
LATHE, ENGINE, 24"x14', 13' and 12' American
LATHE, TURRET, No. 5W Acme universal
LATHE, TURRET, No. 6 W&S, G. H. motor-in-base
LATHE, TURRET, 36" Rogers vertical
LATHE, TURRET, 36" Bullard New Era
MILLER, 18" Cincinnati automatic
MILLER, 24" Cincinnati automatic duplex
MILLER, type 45 Product-O-Matic
MILLER, 30½" x 21" x 12" Ingersoll 4-spindle planer type
MILLER, 48" x 20" x 20' Ingersoll planer type 3 vertical heads
MILLER, 48" x 36" x 12' Ingersoll planer type adj. rail
MILLER, 84" Ingersoll 6-spindle rotary continuous
MILLER, PLAIN, No. 3B Milwaukee and No. 3 Le Blond
MILLER, THREAD, Type C Hall planetary
MILLER, THREAD, Nos. 4, 6 and CT 36 Lees Bradner
MILLER, VERTICAL, No. 1 Milwaukee, Timken
NIBBLER, No. 3 Savage rotary
PLANER, 36"x36"x12' Niles Bement Pond
PRESS, No. 61 Cleveland OBI
PRESSES, Nos. 56 & 56½ Toledo
PRESS No. 94½E Toledo, dbl. cr., s.s.
PRESS, No. 245½ Hamilton s.s. tiered frame
PRESS, No. FG54 Ferracute knuckle joint, 400 ton
PRESS, 600 ton No. 570 Toledo forging
PRESS, No. DA8411 Hamilton double action toggle
PRESS, 100 ton HPM hydraulic
PRESS, 500 ton Wat. Stillman Hydr.
RIVETERS, large variety
ROLL, 20'x3/16" Farnham bending
SLOTTER, 16" Bement Miles crank
SAW, 816S Kalamazoo metal cutting band, new
SAW, 7" No. 14 Higley cold-cutting
SHAPER, 24" American auto. oiled
SHAPER, 27" Morton draw cut
SHEAR, 38" throat No. 17F New Duty
TAPPERS, Two No. 71 Ettco
TESTER, 230,000 inch-pound Tinius-Olsen No. 2 torsion
TESTER, 100,000 lb. Riehle tensile & compression
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No. 4H KEARNEY & TRECKER Vertical Mill, new 1944

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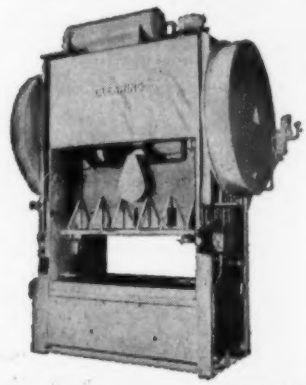

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LATHE, 18" x 8' Bed, L. & S., Select Grd. Hd., M.D.
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Niles 36-44 Vertical Boring Mill, motor driven, 1 rail and 1 side head
Cincinnati #3 Vertical Mill, single pulley drive
Niles 42"-50" Burnisher, Facer and Box Borer, late type, motorized
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Fitchburg 48" Spline Grinder, late
Heald #30 Internal Grinder
Heald #72A3 Internal Plain Grinder
Heald 70A Internal Grinder, late type
Heald 78 Centerless, Internal & Cylindrical Grinder
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Landis 18" x 72" Plain Cylindrical Grinder
Oliver Template Tool Bit Grinder
Sellers 4T Tool Grinder, late type
Sellers 6T Tool Grinder, late type
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Oster 801 Rapiduction Turret Lathe
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American 30" x 14' G.H. Lathe, taper
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American 30" x 40' G.H. Internal Face Plate Drive, 16 speeds, 33' center distance, taper attachment
Milwaukee 2HL Plain Miller, late type
Brown & Sharpe #3 Plain Miller 4 SCD
Hall Style "D" Planetary Miller, late type
Cincinnati 36 x 36 x 18' Planer, DC motor driven
Pond 48 x 48 x 16' Double Housing Planer, DC motor drive, 4 heads
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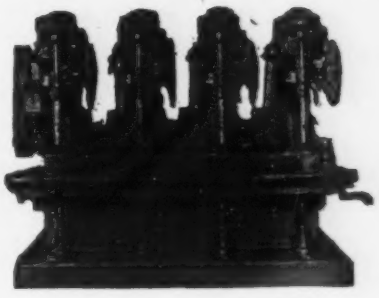

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Qu	HP	Make	Type	RPM
1	285/200 (Spare armature & anti-friction bearings for above motor)	G.E.	MDP-420	350/410
1	150/300	Whse.	MCB-100	370/300
1	150	Whse.	MT-5	350
1	100/140	Whse.	MCB-90	500/415
4*	100/140	G.E.	MDA-108	420/500
2	100/130	G.E.	CO-1831	675/600
1	85/65	Whse.	K-10	635/700
1	75/65	Whse.	K-10	425/470
1*	75/100	Whse.	CK-10	500/675
1	70/90	Whse.	MCB-70	440/400
1	50/80	C.W.	FW	575/480
1	50	G.E.	CO-1829	750
1	50/65	Whse.	MCLA-121	500/450
2	50/65	Whse.	MCA-60	475/425
1	50	G.E.	CO-1810	725
1	65/85	G.E.	CO-1830	700/650
1	65/85	G.E.	CO-1811	600/500
4	45/57	Whse.	K-9	515/470
1	45/57	Whse.	KG-9	515/470
1	35/45	G.E.	CO-1810	500/450
1*	35	G.E.	MDA-104¼	650
1	30	C.W.	EH	750
1	25/35	G.E.	CO-1829	750/450
1	27½	Whse.	K-6	1050
2	25/35	G.E.	MDS-408	575/500
2	25/30	G.E.	MDP-408	600/415
5*	20/25	Whse.	MCA-40	600/470
6	10/15	Whse.	K-5	630/540
2	10/19	C.W.	HW	630/540
1	10/13	G.E.	MDS-406	615/700
1	15	G.E.	CO-2505	700
1	15/19	G.E.	CO-1807	600/525
1*	13/17	G.E.	MDA-103	645/725
1*	13/17	G.E.	MDB-103	645/725
6	12/9	G.E.	MDA-102	875/725
8	11/13	C.W.	A-2-W	1050/910
1	13½/10	Whse.	K-4	600/680
8	10/13	Whse.	MC-41	725/610

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Qu.	KW	Make	RPM	Volts DC	Volts AC
1(3-U)	2400	Whse.	720	600	2400/4800
2	1500	G.E.	600	600	4150/2300
3	1000	Whse.	514	600	11000/6600
4	1000	G.E.	514	600	11000/6600
1	1000	G.E.	514	600	2300
1	500	C.W.	720	275	2300/440
1(3-U)	500	Whse.	1200	250	440
2	500	C.W.	720	575	2300/440
1	400	C.W.	1200	125/250	2300/440
2	250	Whse.	1200	125/250	2300
1	155	G.E.	720	250	2300/440
2	150	Whse.	1200	250	2300
1	100	Al. Ch.	1200	125/250	4000/2300
1	100	Delco	1200	125/250	440/220
1	100	Ridgway	1200	275	4800/2300
1	100	C.W.	1200	125	440/220
1	85	C.W.	1200	250	440/220
1	75	Al. Ch.	900	250	2300
1	75	Whse.	900	75	2300
1	25	Ideal	1750	125	220
1	25	Al. Ch.	1200	250	440/220

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1	3000	Whse.	80	4800/2400	720
2	2100	G.E.	100	2300	360
2	1750	G.E.	100	2300	3600
1	750	G.E.	80	2300	450
1	700	G.E.	80	2300	720
1	250	G.E.	100	2300	514
1	200	Whse.	80	440	1200
1	187	G.E.	80	440	720
1	150	G.E.	100	2300	900
1	150	G.E.	100	550	600
1	120	G.E.	80	550	450
2	135	G.E.	80	4000/2300	1200
3	125	El. Mchy.	100	4800/2400	900
1	125	G.E.	80	2300	900
2	100	Whse.	80	440	1200
1	100	Ideal	80	440	900
2	100	G.E.	80	440	600

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1	1200	G.E.	MT 38	2200	277
2	1000	Al. Ch.	ANY	2200	225
1	800	G.E.	MT	2200	440
1	700	Whse.	CW	2200	720
1	600	G.E.	MT 20	2200	360
1	500	Al. Ch.	ANY	2200	514
2	500	G.E.	I-16-H	2300	450
1	400	G.E.	MT 418	2200	440
1	250	Whse.	CW 937	440	1200
1	250	Al. Ch.	ANY	440	720
1	250	G.E.	MT 414	2200	300
1	125	Whse.	CW 870	2200	900
1	100	Whse.	CW 706	440	1200
1	100	F.H.	H 20 C	440	900
2	100	G.E.	I-15A-M	2300	514

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150 KW G.E.	1200 RPM	250 V. Syn. 2300/4000 v.
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HP	VOLTS	MAKE	TYPE	SPEED	WDG.
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400	2200	G.E.	MT	450	S.R.
300	2200/4000	G.E.	IM	450	S.R.
200	2200	G.E.	IM	600	S.R.
150	220/440	G.E.	ATI	600	Syn.
100	(2) 440	G.E.	IM	450	S.R.
100	440	West.		900	Syn.

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[This section appears in the first and third issues of each month. See advertisers index in these issues.]

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Get more information on Mayari R. Take advantage of its properties to improve your present designs. Our Catalog 259 will explain Mayari R features and applications in detail.

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The Iron Age

DIGEST of th

Vol. 171, No. 13, March 26, 1953

* Starred items are digested at the right.

EDITORIAL

A Glimpse of Hell 7

NEWS OF INDUSTRY

*Special Report: A-Bomb Blast Echoes in Industry 71
*Management: Sales Contacts Cost Too Much.. 74
*Manufacturing: Dream Cars Pace New Designs 75
*Research: National Tube Tries Plastic..... 77
*Labor: When Workers Get Share of Production 78
*Transportation: Auto Taxes Slow Road Building 79
*Raw Materials: Seek Lead, Zinc Price Help ... 80
*Marketing: Metal Prices on Their Own..... 82
Personnel: Iron Age Salutes 121
Iron Age Introduces 123
Clearing House 186

NEWS ANALYSIS

Newsfront 69
*Automotive Assembly Line 88
This Week In Washington 93
West Coast Report 97
*Machine Tool High Spots 99

TECHNICAL ARTICLES

*Single Units to Mass Production in One Move.. 129
*Segregation: Cause of Flakes in Gun Steels.... 133
*Temporary Tooling Breaks Production Bottleneck 138
Transfer Machine Does Rough and Finish Milling 142
*Silver Forms Strongest Brazed Titanium Joints.. 143
Technical Briefs 148

MARKETS & PRICES

*The Iron Age Summary—Steel Outlook..... 161
Market Briefs 163
*Nonferrous Markets 164
Iron and Steel Scrap Markets 168
Comparison of Prices 172
Steel Prices 174

REGULAR DEPARTMENTS

Dear Editor 9
Fatigue Cracks 11
Dates to Remember 13
Free Publications 103
New Equipment 108

INDEX OF ADVERTISERS 197

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Address mail to 100 E. 42 St., N. Y. 17, N. Y.

NEWS DEVELOPMENTS

A-BOMB BLAST LESSONS ECHO INTO INDUSTRY—P. 71
Industry was thinking sober thoughts last week after the test A-blast. Iron Age Editor Tom Campbell was on the scene to report and evaluate damage to homes, cars, and dummies. Results of the test will be declassified for industry, civil defense. List industry steps to prepare for atomic explosion.

HOW "DREAM CARS" HELP THE AUTO INDUSTRY—P. 75
Every auto show is sure to have some experimental models on display. They really please the crowds but do they serve a practical purpose? Many have paved the way for engineering advances and styling changes. They feel out the public, give excellent publicity. A trend towards more of them is noted.

LABOR, MANAGEMENT PRODUCTIVITY PLAN—P. 78
Couch-Uthe Co., Ohio automatic screw machine products firm, has installed a Rucker Share of Production Value Plan to the mutual enthusiasm of both labor and management. Both expect higher profits, wages through shared increases in efficiency. The firm is serving as a guinea pig for its industry.

STATES KNOCK FEDERAL AUTO EXCISE TAXES—P. 79
State legislatures are complaining to Congress that continued high federal excise taxes on autos and related items are slowing construction of much-needed new roads. The states say they don't dare pile any more levies on motorists. But it is doubtful if Congress will take any early action.

SEEK VARIABLE TARIFFS FOR LEAD AND ZINC—P. 80
Prices sliding from 19.5¢ to 11¢ for zinc and from 19¢ to 13.5¢ for lead in less than a year have closed many western mines. Producers now seek an import duty that would increase 1¢ for each 1¢ decrease below a set base price. But the plan could snag on the international tariff agreement signed in 1948.

DOWNTIME SLOWS AUTOMATION PROGRESS — P. 99
As machining operations become more automatic and greater use is made of transfer equipment, the need to reduce downtime becomes even more important. Tool changing is one of the major causes of lost production time. Automation is the main theme at Detroit meeting of American Society of Tool Engineers.

the Week in Metalworking

ENGINEERING & PRODUCTION

PLANT CONVERTED FOR MASS PRODUCTION—P. 129
Output value of parts for jet engines was increased by three to four times in a plant formerly operated at capacity. The changeover tooks 9 months. Conveyors were installed, special machines designed and built, and standard machines moved. Requirements for skilled labor have also been lowered.

SEGREGATION FLAKES ALLOY GUN STEELS—P. 133
Guns set aside during World War II have been studied. The major cause of flaking in 4340 blooms is a direct result of dendritic segregation. Heat-treating cycles must be long to overcome transformation times of high-alloy "spots." Hydrogen theories have been discounted.

TEMPORARY TOOLING BREAKS BOTTLENECK — P. 138
Aircraft engine production schedules, threatened by delays in machine tool deliveries, were relieved by temporary tooling until permanent equipment arrived. Groups of standard machines took the place of special machines. Delivery dates were met while permanent tools gradually filled in the lines.

SILVER FORMS STRONG JOINTS IN TITANIUM—P. 143
Pure titanium is very brazable under proper conditions. The most favorable conditions are quick, uniform heating, inert gas protection and moderate cooling. Joints made with pure silver are stronger than those obtained with silver-brazing alloys. It has excellent wetting characteristics.

NEXT WEEK—VACUUM MELTING IMPROVES 52100 STEEL
Better fatigue life and improved impact properties have been found in samples of vacuum-smelted 52100 compared with commercial 52100 steel. Extra metal cleanliness is an important factor. Furnaces melt 1200 lb of nonferrous metal, or 600 lb of steel or high-temperature alloy.

NEXT WEEK—IMPACT FORGING USED FOR ODD SHAPES
Aluminum shapes hard to form by other methods are easily made by impact forging. Faster production, less waste and greater economy in machining time and labor are possible. Forgings have been made in 2S, 52S, 61S and 14S alloys. Method pays off on small orders where odd shapes make machining costly.

MARKETS & PRICES

MARKET DEVELOPMENT SAVES SELLING TIME — P. 74
Industrial selling costs are too high for salesmen to spend their time on contact work. Market development pre-sells your product as well as building good will. It's a management job and advertising, though important, is only one part of it. Armco's R. M. Nelson tells how to establish such a program.

NATIONAL TUBE DIV. TRIES PLASTIC PIPE — P. 77
Plastic pipe is cutting deeply into some markets that used to be exclusively steel's. Steel producers recognize and admit this. National Tube Div. has installed a plastic pipe extrusion machine on a strictly experimental basis. Production, cost research is the aim. Some favor plastic-coated steel.

DECONTROL WON'T START METALS SPIRAL — P. 82
Metals are now free to seek their own price levels for the first time since January 1951. Consumers ask, "What now?" Answer is there won't be any great upheaval. Some readjustments are bound to come but the big factor will be result of coming labor negotiations, due later this year.

AUTO SALES A BIG FACTOR IN THE ECONOMY—P. 88
The sales pattern will govern automobile production and wield strong influence on the steel market. If sales continue high both industries will boom. If they slump, the opposite happens. High production for the spring sales rush has built dealer stocks high. Bullish factors outweigh bears.

STEEL PRICES WILL GO UP—BUT CAUTIOUSLY—P. 161
Steel prices will go up now that controls have been lifted. But producers are sticking by their announced intention of moving slowly on the price front. Nevertheless consumers might as well prepare for the inevitable. Some steel people are urging increases reasonably soon on ground they are justified.

END COPPER SCRAP ALLOCATION CONTROL—P. 164
M-16 has been amended by National Production Authority. Revision drops allocation controls on copper and brass scrap, several other copper raw materials. But the new version retains control of scrap's destination. Some people foresee cheaper copper by summer but now price is still muddled.

EASTON simplified production

and improved product with this

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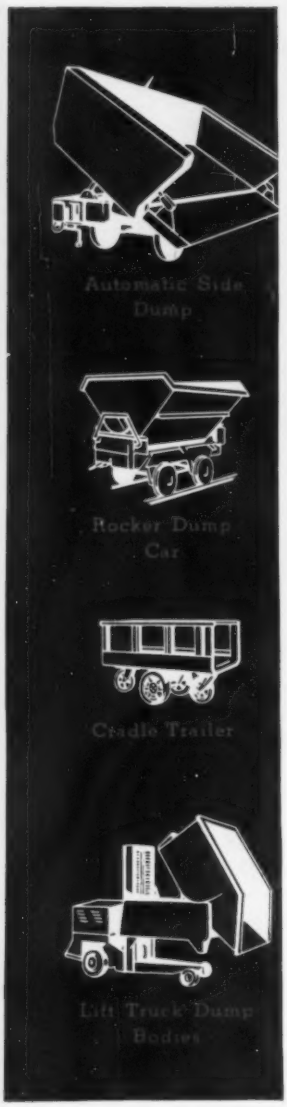
Press Brake



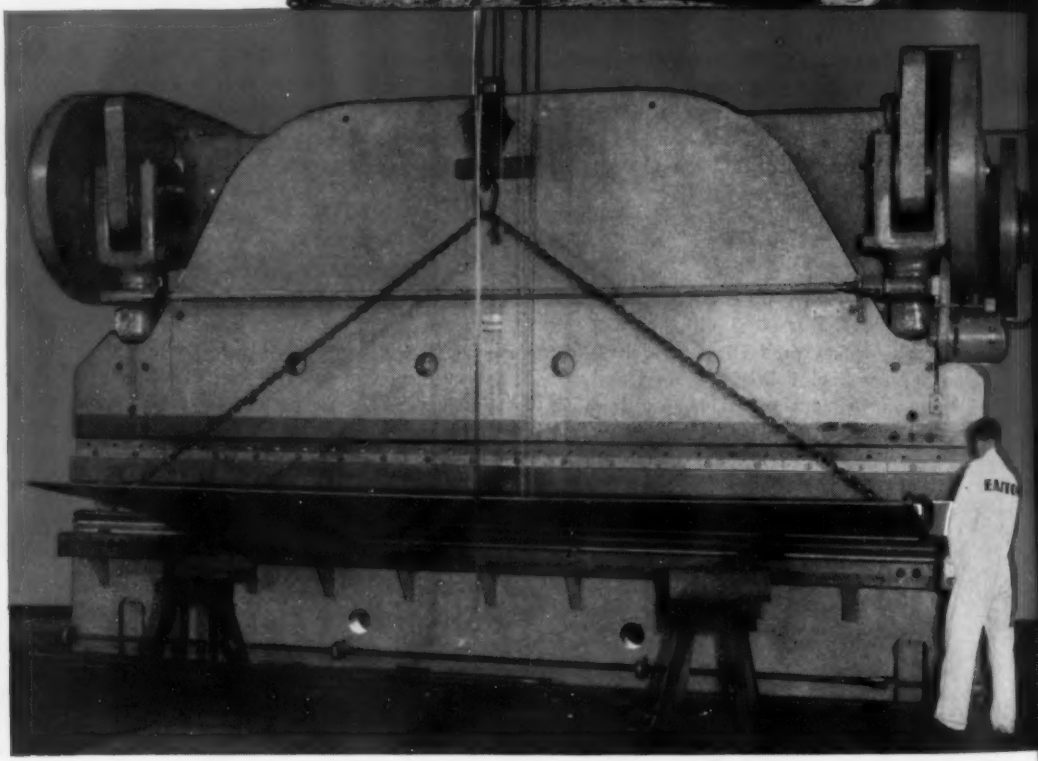


Illustration courtesy Easton Car & Construction Company, Easton, Pennsylvania.

Here a Cincinnati Press Brake is forming ½" plate for wide sections of off-highway trailers, at the Easton Car & Construction Company, makers of a large line of products for industrial transportation.

By using this Cincinnati Press Brake, some welding operations were eliminated, which improved the product, and reduced production costs at the same time.

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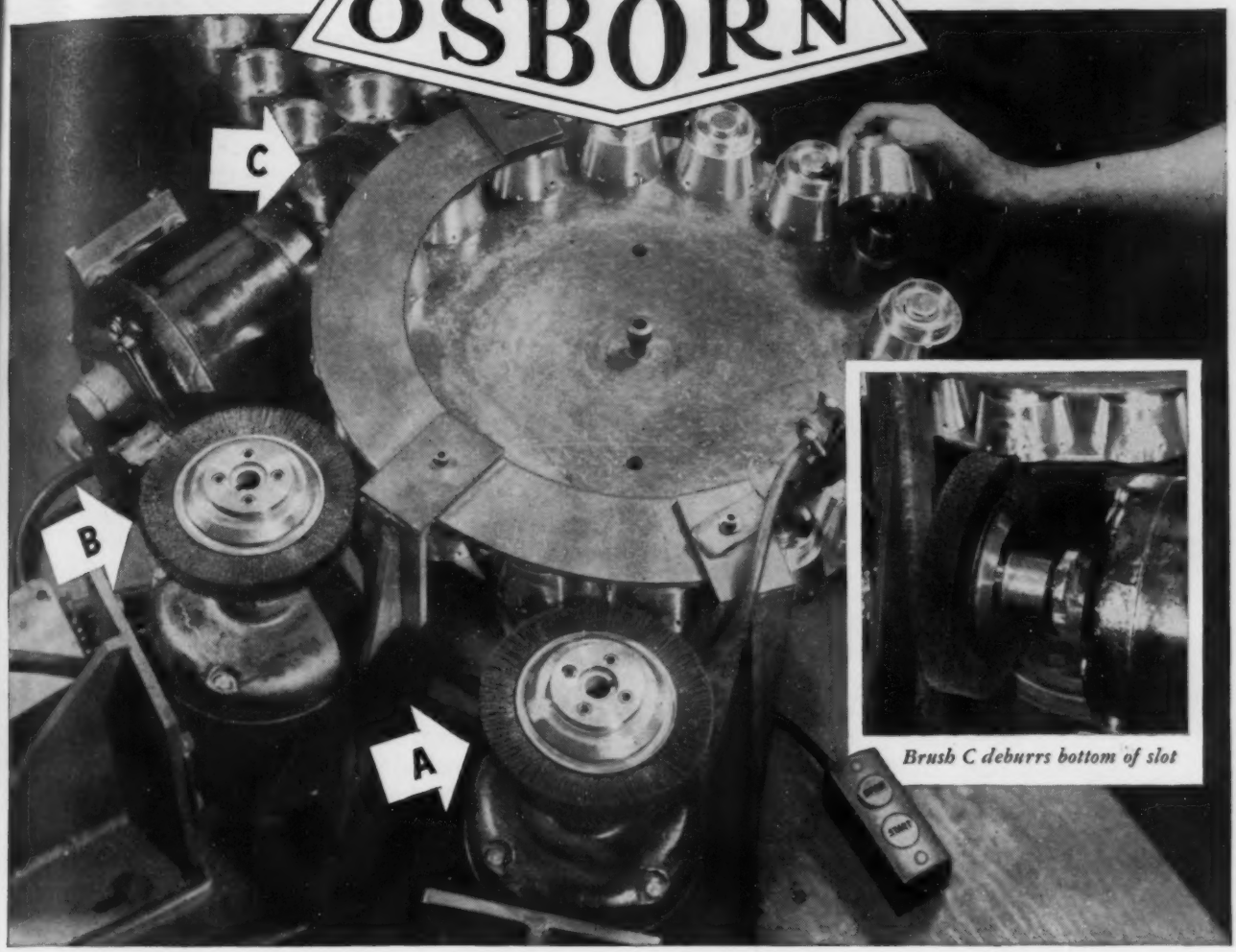

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Shipped in 1½ hours

10:15 a.m.—two plates needed immediately. With customer still on phone, Service Department alerted. Steel sheared to size and on its way by 11:45 a.m. same morning.

Night Shift Comes Through

3:00 p.m.—order phoned in for 20,000 lbs. of sheet steel. Needed (90 miles away) at 8:00 a.m. next day. Working through the night, Ryerson warehouse crew cuts the steel—loads it on truck that leaves at 6:00 in the morning. Shipment arrives at customer's plant on time.

Breakdown Saturday—Production Monday

Saturday—11:45 a.m. Emergency call. 8″ alloy steel round needed to repair breakdown of main shaft. Cut during lunch hour, the 1700-lb. bar is immediately trucked to airport; loaded on cargo plane. Customer meets plane on arrival in distant city. Repairs are completed Sunday; full production resumed on Monday.

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3:00 p.m.—200 lbs. of flat bars, in cut lengths, needed in a hurry 600 miles away. Just 2½ hours after receipt of order, plane takes off with steel from Ryerson. At 10:51 p.m. same day, customer has his steel.

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11:15 a.m.—Manufacturer reports breakdown; needs 2″ x 72″ x 10′ plate at once—must be flame cut. Plate delivered at 2:15 p.m., still hot.

Of course, out of thousands of orders, we can fill only relatively few at such breakneck speed. However, in emergencies, the world's largest steel service organization, with 15 interconnected plants, is your best source for steel. And, despite some shortages, you can also count on Ryerson for most every day-to-day steel requirement. So when you need steel—carbon, alloy, stainless—call your nearby Ryerson plant.

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Dates to Remember

Meetings

March

THE MAGNESIUM ASSN.—International Magnesium Exposition, Mar. 31-Apr. 1-2, National Guard Armory, Washington, D. C. Headquarters are at 261 Constitution Ave., Washington, D. C.

April

STEEL SHIPPING CONTAINER INSTITUTE, INC.—Annual meeting, Apr. 7-9, Palm Beach Biltmore Hotel, Palm Beach, Fla. Institute headquarters are at 600 Fifth Ave., New York.

LEAD INDUSTRIES ASSN. — Annual meeting, Apr. 9-11, The Greenbrier, White Sulphur Springs, W. Va. Association headquarters are at 420 Lexington Ave., New York.

EXPOSITIONS

WESTERN METAL SHOW — March 23-27, Los Angeles.

MATERIALS HANDLING SHOW — May 18-22, Philadelphia.

NATIONAL METAL SHOW—Oct. 19-23, Cleveland.

ELECTROCHEMICAL SOCIETY—Spring meeting, Apr. 12-16, Statler Hotel, New York. Society headquarters are at 235 W. 102nd St., New York.

AMERICAN SUPPLY & MACHINERY MANUFACTURERS ASSN., INC.—Annual convention, Apr. 13-15, Miami, Fla. Association headquarters are at 814 Clark Bldg., Pittsburgh.

AMERICAN SOCIETY OF LUBRICATION ENGINEERS — Annual meeting and lubrication exhibit, Apr. 13-15, Statler Hotel, Boston. Society headquarters are at 343 S. Dearborn St., Chicago.

AMERICAN GAS ASSN.—Sales conference, Apr. 13-15, Warwick Hotel, Philadelphia. Association headquarters are at 420 Lexington Ave., New York.

CUTTING DIE INSTITUTE—Semiannual meeting, Apr. 15, Sheraton Cadillac Hotel, Detroit. Institute headquarters are at 1643 National Bank Bldg., Detroit.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION—Annual engineering conference, Apr. 15-16, Detroit. Institute headquarters are at 101 Park Ave., New York.

NATIONAL PETROLEUM ASSN.—Semiannual meeting, Apr. 15-17, Cleveland Hotel, Cleveland. Association headquarters are at the Munsey Bldg., Washington.

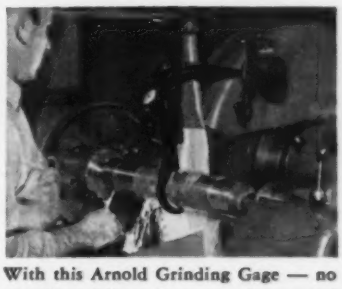
GRINDING WHEEL INSTITUTE & ABRASIVE GRAIN ASSN. — Spring meeting, Apr. 16-19, The Homestead, Hot Springs, Va. Institute headquarters are at 2130 Keith Blvd., Cleveland.

NATIONAL SCREW MACHINE PRODUCTS ASSN.—Annual meeting, Apr. 18-23, St. Moritz Hotel, New York. Association headquarters are at 2860 E. 130th St., Cleveland.

If the operator could see what he's doing we wouldn't have all this scrap!

DON'T ACCEPT THOSE PILES OF SCRAP as an unavoidable byproduct of production! Such waste in man hours and machine time costs you heavily in profits — and this loss is *not* necessary. Just because your old style, fixed-type gages are as good as the day you bought them — and they're paid for — don't overlook their part in producing excessive scrap. With these obsolete gages workpieces are *right*, or *wrong*, and the operator cannot know when a dimension is approaching limits until after scrap results. With Federal Indicating Gages, however, the pointer on the dial *shows* exactly how a workpiece conforms to specifications and machine adjustments can be made to correct errors *before* they occur.

Whatever kind of indicating gage you require — air, mechanical, electronic, or electrical—we have just what you want. Fill in the coupon and mail it to us today. Federal Products Corporation, Providence 1, R. I.



With this Arnold Grinding Gage — no time lost while gaging . . . no interrupted production . . . no overgrinding or scrap.

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Largest manufacturer devoted exclusively to designing and manufacturing all types of DIMENSIONAL INDICATING GAGES.

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☐ I would like to discuss a gaging problem with you.

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☐ Dimensional Dial Indicators
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INSIDE AN EXIDE-IRONCLAD

Inside . . . where it counts most . . . EXIDE-IRONCLAD is entirely different than any other battery. It's made that way by EXIDE'S exclusive IRONCLAD slotted-tube construction . . . a principle that provides direct operating-hour savings for you.

OF ALL BATTERIES, ONLY EXIDE-IRONCLADS HAVE POWER TUBE POSITIVES

The positive plate is different . . . unique . . . exclusive. It is the most effective retainer of active material yet demonstrated in heavy duty service. Slotted tubes contain the active material. So fine are the slots that, while permitting easy access of electrolyte, they retard the active material from washing out, hold it during repeated cycles of charge-discharge, and the vibration of rough use.

Today's battery-powered equipment is being used harder than ever before. Unless the batteries have internal shock protection they tend to deteriorate under hard usage—both electrical and mechanical. Only Exide-Ironclad has the plus-protection of the tubular positive that can withstand today's more exacting and rigorous heavy-duty battery services.

Your EXIDE sales engineer will give you the factual inside story. See for yourself why *only* an EXIDE-IRONCLAD gives maximum day-after-day service under the most difficult operating conditions . . . *with a minimum of maintenance expense.*

THE ELECTRIC STORAGE BATTERY CO.
Philadelphia 2
Exide Batteries of Canada, Limited, Toronto

1888 . . . DEPENDABLE BATTERIES FOR 65 YEARS . . . 1953

Cross section shows relation of positive plate to separators and negative plate. Note the much greater exposure of active material to electrolyte as compared with that of the usual flat positive plate. This greater exposure makes possible the high power ability and uniform-voltage characteristics of the Exide-Ironclad. The negative plates have been made extra heavy to balance the increased capacity of the power tube positives.

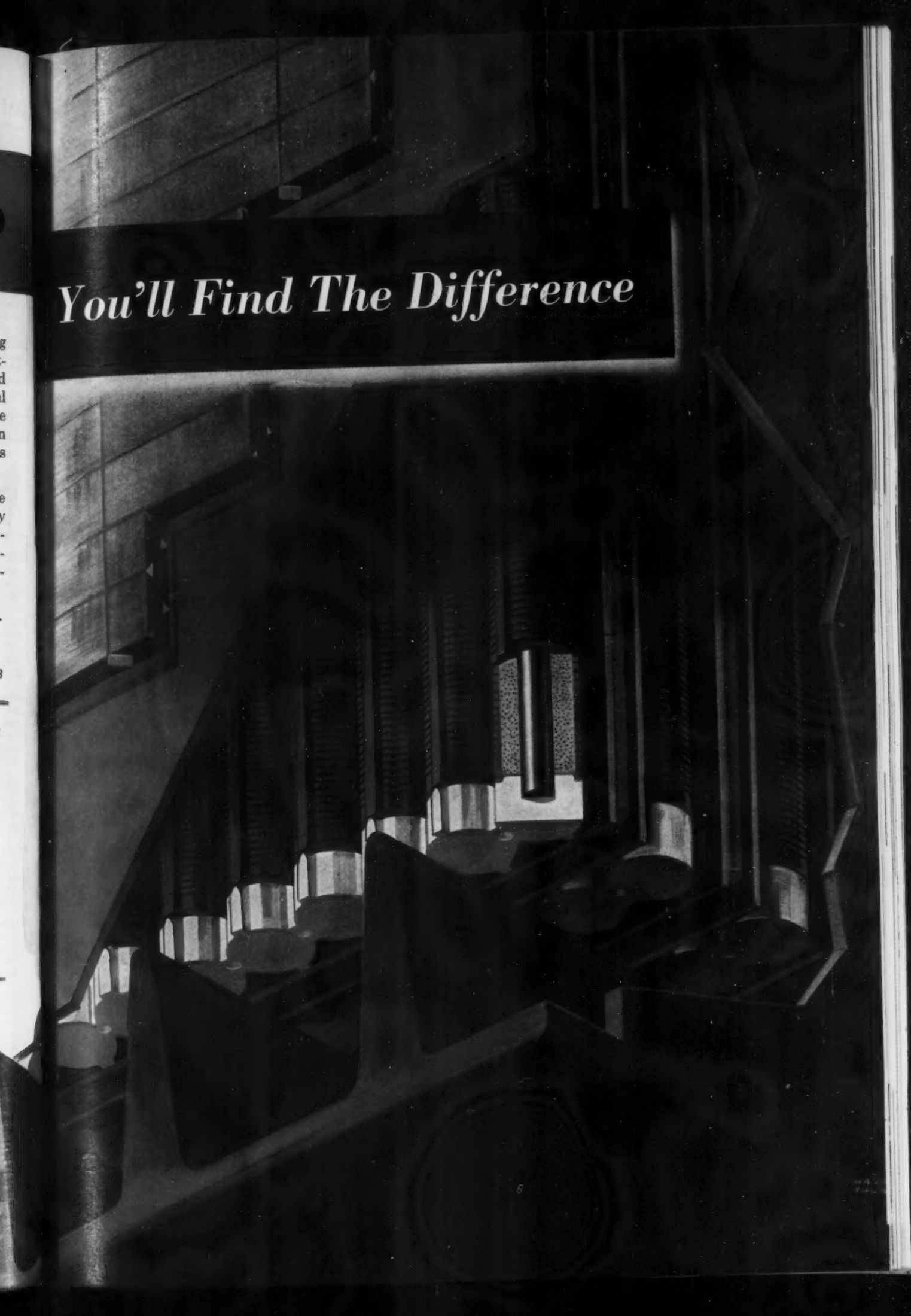
Running through center of each tube is an alloy core which is cast with the heavy top cross bar. These form the sturdy, non-buckling grid. Both core and top bar are made of Exide's new corrosion-resistant Silvium, an alloy of silver, lead and other components, which adds greatly to plate's long life.

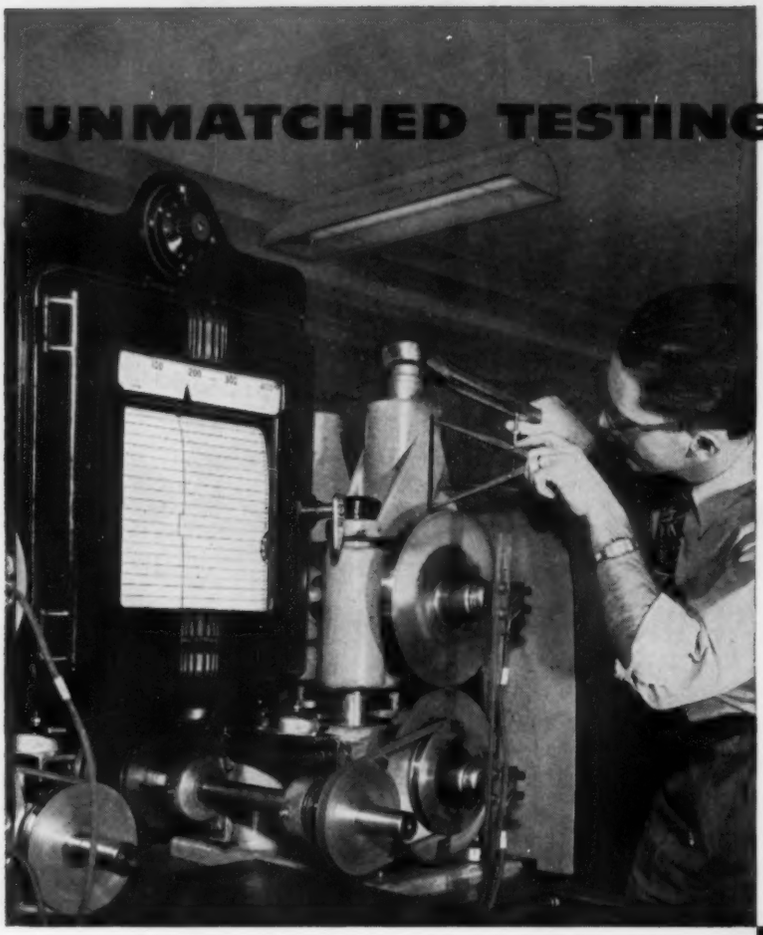
New polyethylene insulating tube sealer of acid-proof, non-corroding plastic fits snugly into bottom of slotted tubes and further reduces loss of active material. Thus more active material remains available, and the high battery capacity is maintained for a longer working life.

Exide-Ironclad

YOUR BEST POWER BUY . . . AT ANY PRICE

"Exide-Ironclad" and "Silvium" *Reg. T.M. U.S. Pat. Off.*


You'll Find The Difference



UNMATCHED TESTING FACILITIES...

one of many reasons for Hyatt leadership!

In testing laboratory or manufacturing plant, Hyatt's facilities are second to none. Continuing research in methods and materials, and exacting inspection with the finest in modern equipment, has made the Hyatt name a synonym for "highest quality." That's why Hyatt Roller Bearings are so widely used in tables, cars, cranes and other steel mill equipment. Design engineers know that Hyatt bearings ease shock loads, extend equipment life and reduce operating costs. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

America's finest!

A statement from
a conservative organization:

"Our records show that when a manufacturer once discovers the uniform quality of Roebling flat spring steel, he becomes a steady Roebling customer."

You, too, *pay* for the best spring steel... make sure you *get* it. Specify Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.

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A subsidiary of The Colorado Fuel and Iron Corporation

S.S. United States . . . most modern, fastest liner afloat.

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FEDDERS ROOM AIR-CONDITIONERS

GET LASTING ENAMEL ADHERENCE

. . . and adherence of baked synthetic enamel finishes is extremely important to Fedders-Quigan Corporation, Buffalo, New York, manufacturers of Room Air Conditioners.

Parts of these units are often subjected to a constant flow of moist and humid air. Approximately 50 percent of the shell is exposed to the atmosphere. Because of high vulnerability to rust and corrosion, it is essential that the exposed surfaces not only "take" but also tenaciously *hold* the attractive finishes that are applied.

For these reasons, Republic Electro Paintlok is used for the shell, mounting brackets, fan shrouds, bulkheads and covers of the Fedders Room Air Conditioners.

Republic Electro Paintlok facilitates manufacturing operations, too. The tight zinc coating will not crack, peel or flake during normal fabrication. Special chemical treatment gives the zinc coating an inert, non-metallic surface which is absorbent in character; a prime condition for painting.

Get the full story of product improvement with Electro Paintlok. Write for the colorfully detailed Republic Booklet 525. Address:

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Export Dept.: Chrysler Building, New York 17, New York

Republic

REPUBLIC STEEL

ELECTRO ZINC PLATED SHEETS
Electro Paintlok · Electro Zincbond

Other Republic Products include Carbon, Alloy and Stainless Steels — Sheets, Strip, Plates, Bars, Pipe, Tubing, Bolts and Nuts, Wire

The Day the Cake Fell!

Just suppose all the nuts, bolts and screws were suddenly removed from a sparkling new range. A great deal more than a cake would fall—as the illustration above dramatically shows.

Yes, fasteners *are important*—and worth all the time and care you take in selecting those that are "just right" for your product. Lamson & Sessions is currently supplying most of the appliance manufacturers with bolts, nuts and screws—each type engineered to meet individual requirements.

Regardless of the product you manufacture; it will pay to take a critical look at the fasteners you are now using and ask yourself these questions:

Can I save money by replacing a "special" with a "standard"? Or will the use of a "special" simplify production, thereby, saving time and perhaps materials?

Remember, whatever your problem, to check with Lamson & Sessions—one of the few manufacturers offering a *complete line* of fasteners teamed with expert engineering service.

The LAMSON & SESSIONS Co.
1971 West 85th St. • Cleveland 2, Ohio
Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

Lamson + Sessions

FOR PROMPT DELIVERY AND HELPFUL SERVICE, ORDER FROM YOUR LAMSON DISTRIBUTOR

MACHINE SCREWS
Precision made for fast, economical assembly.

PLUG NUTS
Ideal for blind or hard-to-reach places.

TAPPING SCREWS
Choice of round, pan, truss, flat oval, hexagon and Phillips heads.

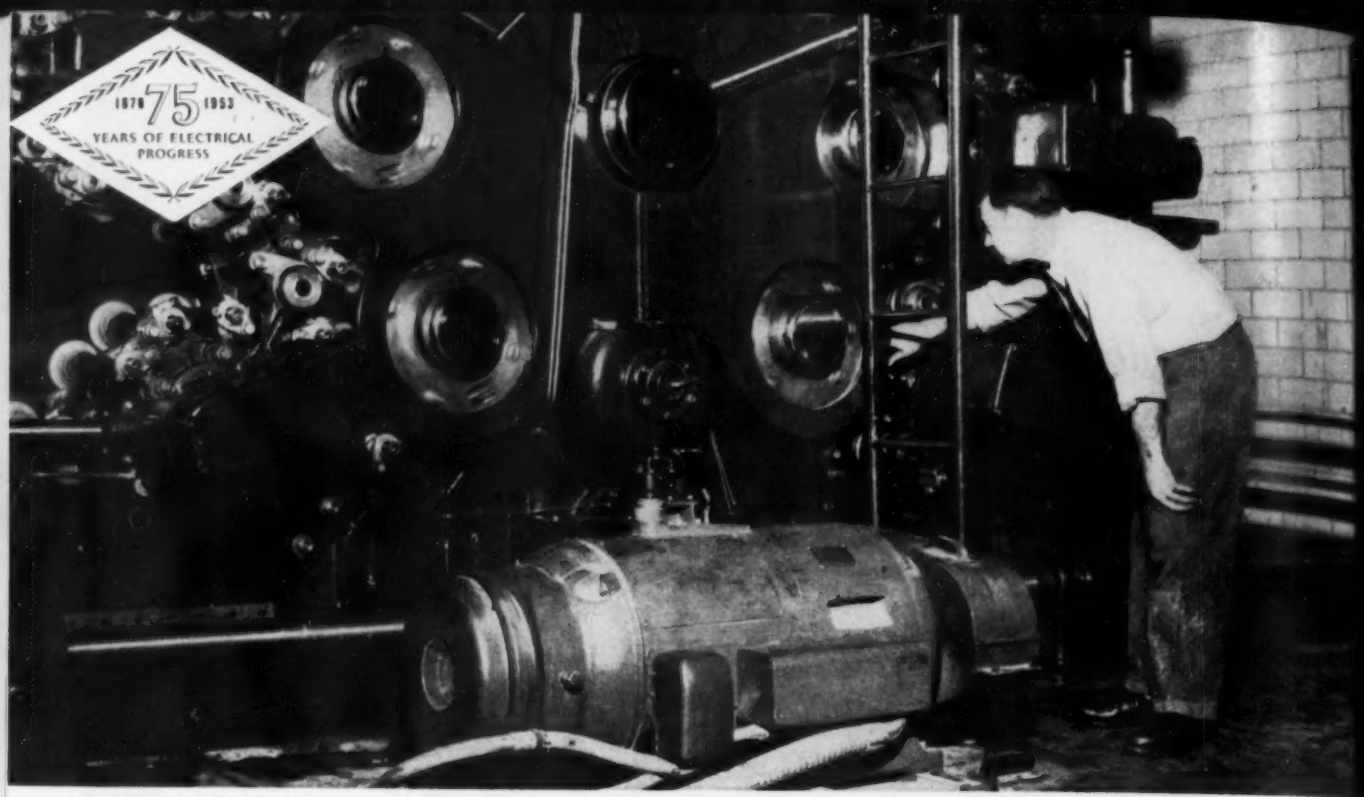
CAP SCREWS
"1035" Hi-Tensile Heat-treated steel.

SQUARE AND HEX MACHINE SCREW NUTS
Semi-finished, hot pressed, cold punched.

LOCK NUTS
Economical, vibration proof. Can be used repeatedly.

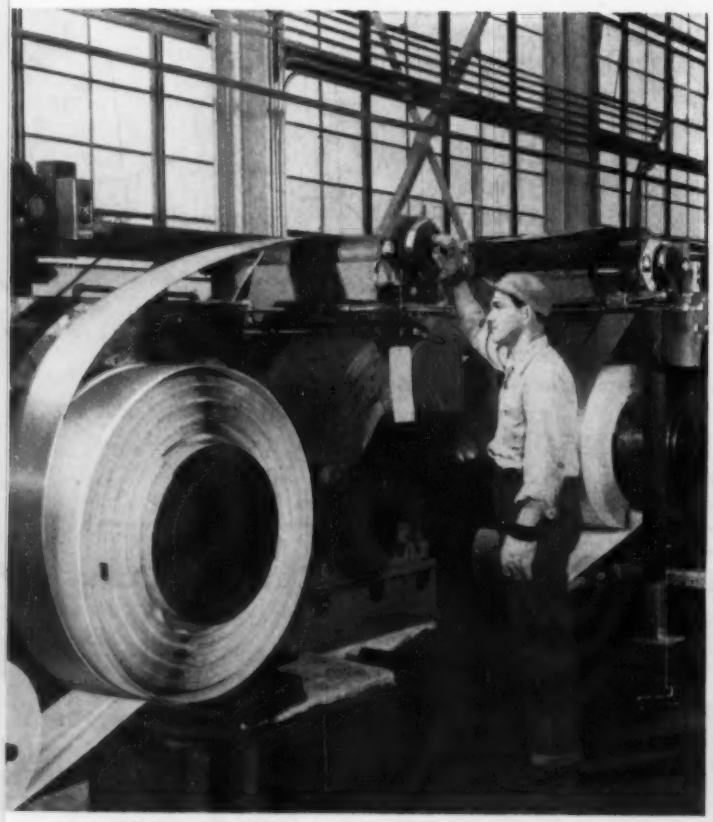
COTTER PINS
Steel, brass, aluminum and stainless steel.

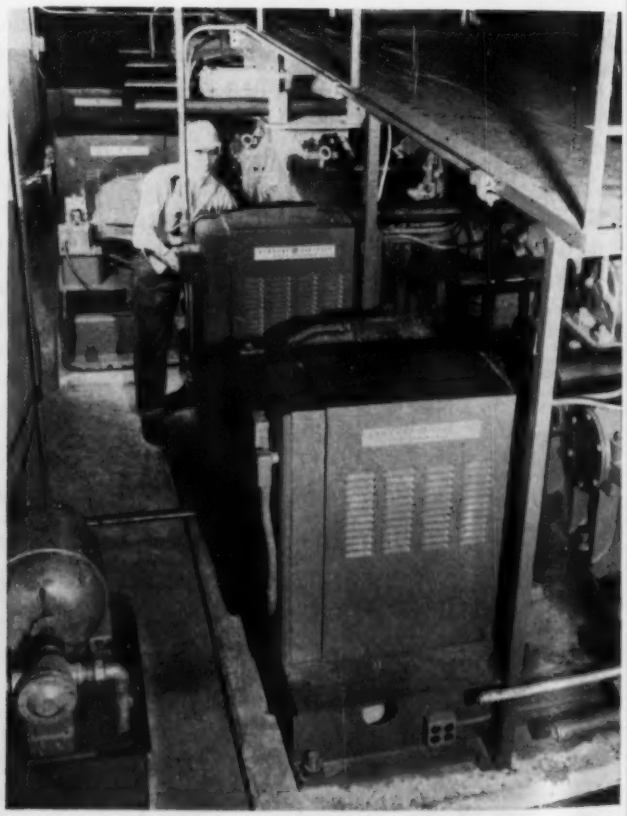
"1035" SET SCREWS
Cup point type, hardened and heat-treated.



G-E ACA MOTOR is the main drive on this five-color press at Alford Cartons, manufacturers of folding boxes, Ridgefield Park, New Jersey. Working from AC current with no conversion equipment required, the ACA Motor is the low cost way to Adjustable-speed Drive performance. You get stepless speed adjustment within a speed range of from 3 to 1, 6 to 1, and 20 to 1.

Make your machinery more versatile





G-E SPEED VARIATOR boosts winders "spooling" chrome strip steel at Wallingford Steel Co., Wallingford, Conn.—handles all speeds from 5 to 80 feet per minute. G-E Speed Variators, with speed ranges up to 40 to 1, are complete "package" units—available in ratings from 1 to 200 hp. For even greater accuracy and versatility, these drives may include amplidyne or electronic regulators.

G-E THY-MO-TROL* DRIVE at the El-Ge Potato Chip Co., York, Pa., electronically regulates potato chip processing where accurate speed control is extremely important to the finished product. Thy-mo-trol drive is available between 1/40 and 75 hp, offers smooth speed adjustment ranging up to 100 to 1 and can be made to hold regulation as close as ±½% regardless of changes in voltage.

with a G-E Adjustable-speed Drive!

G-E ADJUSTABLE-SPEED DRIVES offer you the chance to get the most from your machinery investment. You can step up production, minimize material waste, improve product quality, and enjoy the ability to produce a greater variety of goods.

THERE IS A G-E ADJUSTABLE-SPEED DRIVE FOR YOU. Whether you need speed regulation within ±½% or ±10% you can get an economical Adjustable-speed Drive from the full G-E line. From the G-E ACA motor which requires but a simple twist of a dial . . . to the G-E Thy-mo-trol drive which permits precise electronically controlled drive speeds . . . General Electric manufactures a drive that will enable you to produce better and more uniform products. Packaged drives are available in sizes from 1/40 to 200 hp. Depending on hp, speed ranges are available from 3 to 1 up to 100 to 1.

FOR FULL INFORMATION consult your nearest General Electric Apparatus Sales Office. Your G-E Sales Representative will be glad to recommend the most economical drive best suited to your operation. For printed information on the complete line of Adjustable-speed Drives, use the coupon.

*Reg. Trademark of General Electric Company

You can put your confidence in—

GENERAL ELECTRIC

LET G.E. HELP YOU PICK THE RIGHT DRIVE

Because only General Electric makes all major types of electric adjustable-speed drives, it is best qualified to help you select the right drive. Send for these informative bulletins.

☐ **A.** This 26-page manual describes all four types of drives and where to apply them. Bulletin GEA-5334.

☐ **B.** Lower cost, simplest a-c drive. Bulletin GEA-4883.

☐ **C.** More flexibility, moderate cost. Bulletin GEA-5335.

☐ **D.** Top performance, 1/70—75 hp. Bulletin GEA-5337.

☐ **E.** Top performance, 1–200 hp. Bulletin GEA-5336.

General Electric Company
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☐ for reference only
☐ for planning an immediate project

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You get the "TOUCH OF GOLD" from Norton

Norton grinding and lapping machines add value and profit to everything they produce

Only Norton offers you such long experience in both grinding wheels and machines to help you produce more at lower costs. Norton really gives you the "Touch of Gold" that increases product value and adds to product profit.

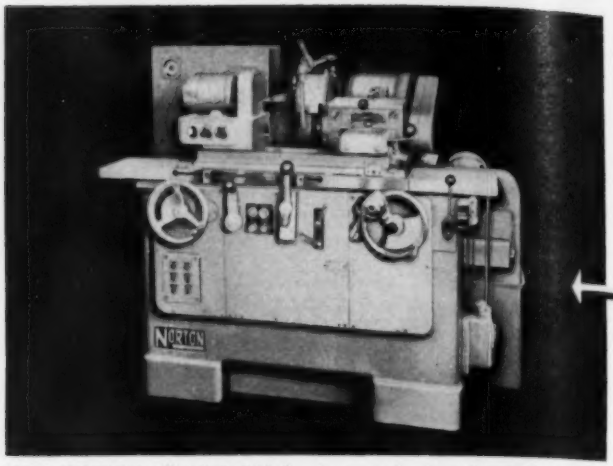
Take advantage of this experience to discuss with us your present grinding problems or your post-emergency production to fit tentative delivery schedules into your future plans.

To Economize Modernize With **NEW**

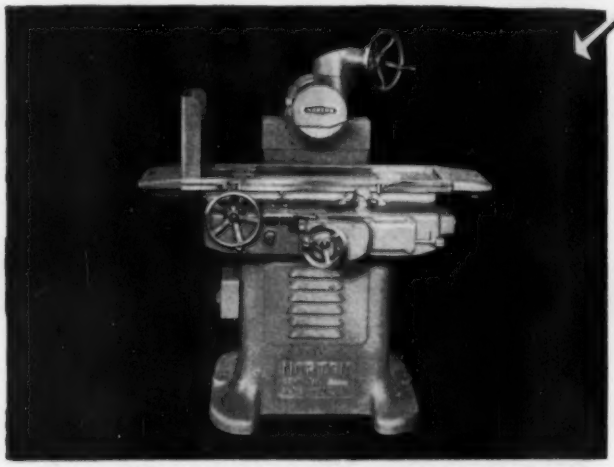
NORTON

GRINDERS *and* **LAPPERS**

Making better products to make other products better



NEW NORTON 4" TYPE CTU Semiautomatic, in 12" and 18" work-length capacities, rounds out the Norton Cylindrical Grinder Line. Like the larger 6" and 10" CTU's, it offers you a unique combination of speed, accuracy, flexibility and sturdiness. All Norton CTU Semiautomatics have "one lever" control of automatic time cycle which reduces operator attention merely to loading and unloading. *Catalog No. 531* gives you all details.

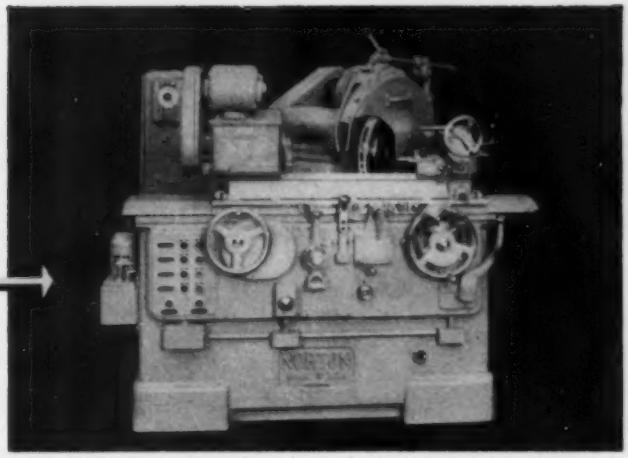


NORTON HYDRAULIC SURFACE GRINDERS, designed with both hand and hydraulic table traverse and cross feed, produce plane surfaces smoothly and speedily. Convenient controls and easy accessibility keep operating and maintenance time low. Such extras as a permanent magnet or direct current type chuck, wet grinding attachment or individual dust exhaust system help make a good basic machine better. Three sizes: 6", 8", and 10". *Write for Catalogs 954 (6"); 190 (8") and 1745 (10")*

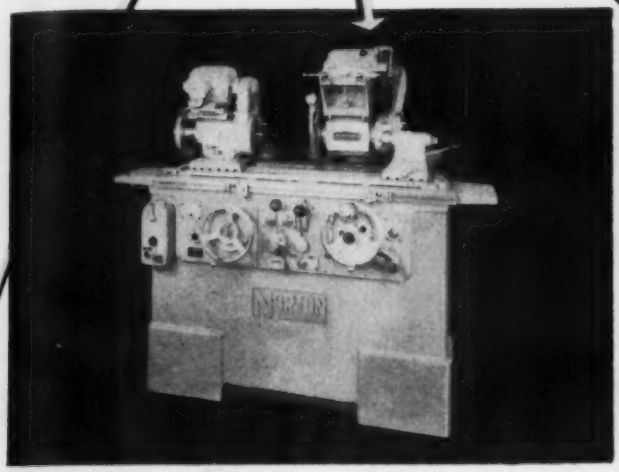
NORTON TYPE 16FC VERTICAL LAPPER produces either flat or cylindrical work to a high degree of dimensional accuracy, parallelism and finish. Widely used for such work as diesel injector parts, plug gages, size blocks, sides of small bearing races, pump gears and plates and other parts. Other Norton lappers are available. *Write for Catalog 212 and General Catalog 1843.*

Norton Grinders and Lappers

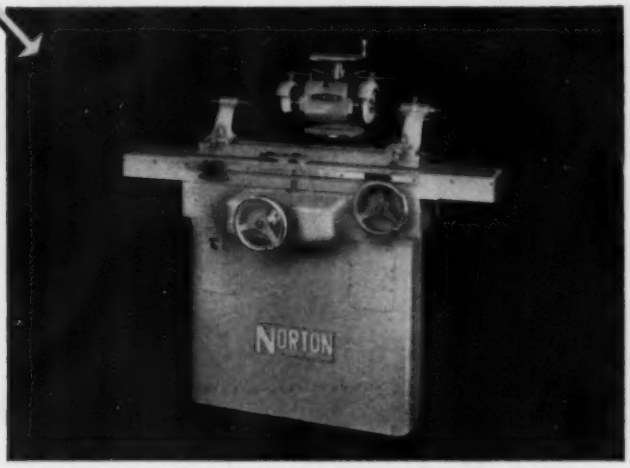
The world's most complete line



NORTON ANGULAR WHEELSLIDE GRINDERS are semiautomatic machines which simultaneously grind thrust surfaces and adjacent diameters to finest accuracy and finish. By eliminating the need for an extra operation, they cut over-all production costs. "One lever" control of automatic time cycle, as in CTU's, helps operators produce more with less effort. Two sizes: 6"x18" and 10"x36". *Catalogs No. 533 (6"x18") and 1793 (10"x36")* give you more information.



NORTON UNIVERSAL GRINDERS are so flexible they handle almost an endless variety of jobs. Compound swivel arrangement allows you to set and feed the wheel at any angle. External, internal, face or angular wheelslide operations come easy with Norton Universal Grinders. Four sizes: 10"x20" and 12", 14", or 16", each with work length capacities of 36", 48", or 72". *Write for Catalogs 170 (10"x20") and 1668 (12", 14", 16").*



NORTON NO. 20 CUTTER AND TOOL GRINDER, with its tilting wheel head, is the most versatile machine in its class. Wheel head tilts 15° above or below horizontal . . . may be swivelled 360° in a horizontal plane. Integral motor cartridge type spindle, duplicate controls for front or either-side operation are other features that make this machine first choice for toolroom grinding. *Write for Catalog 189.*

ONLY NORTON OFFERS YOU OVER 50 YEARS OF COMBINED EXPERIENCE IN:

Abrasives and Grinding Wheels

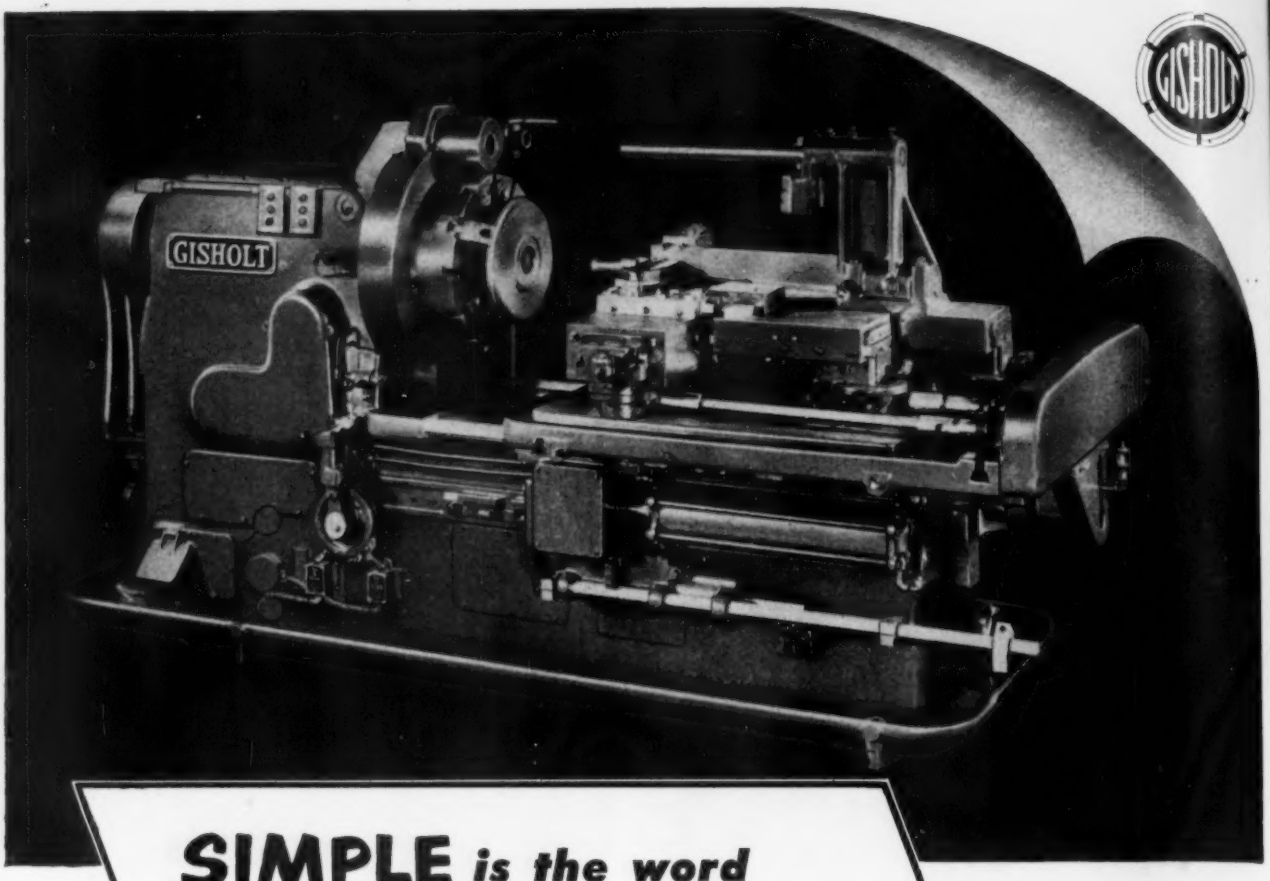
+

Machines for Cylindrical Grinding • Surface Grinding • Cylindrical and Flat Lapping • Universal Tool and Cutter Grinding • Universal Multipurpose Grinding • Specialized Grinding • Crankshaft Grinding • Cam Shaft and Contour Grinding • Roll Grinding.

NORTON COMPANY • MACHINE DIVISION • WORCESTER 6, MASS.

District Sales Offices: Hartford • New York • Cleveland • Chicago • Detroit

In Canada: J. H. Ryder Machinery Co., Ltd., Toronto 5

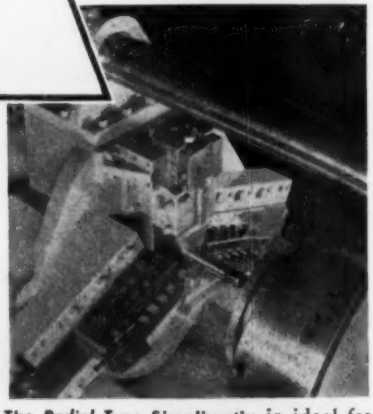


SIMPLE *is the word for the* SIMPLIMATIC!

Wherever you have a sufficient run of similar parts, the Simplimatic Automatic Lathe can solve several of your problems at once.

1. High speed production assures larger output at lower cost per piece.
2. The wide variety of tool arrangements on the large, flat table of the *Platen Type* Simplimatic (shown above) makes it adaptable to a wide range of work.
3. Training time is reduced to a minimum because the entire machining cycle is completely automatic. One operator normally runs several Simplimatics.

The extreme flexibility of the standard Simplimatic can frequently give you all the advantages of a machine designed especially for your job. If you want simple, quick, lower cost production, this is a good time to investigate the Gisholt Simplimatics. Ask for literature.



The *Radial Type* Simplimatic is ideal for machining flywheels, etc., with wide faces and multiple inside and outside diameters. Extreme rigidity permits multiple tooling and maximum cutting speeds, sustained accuracy and excellent life of cutting tools.

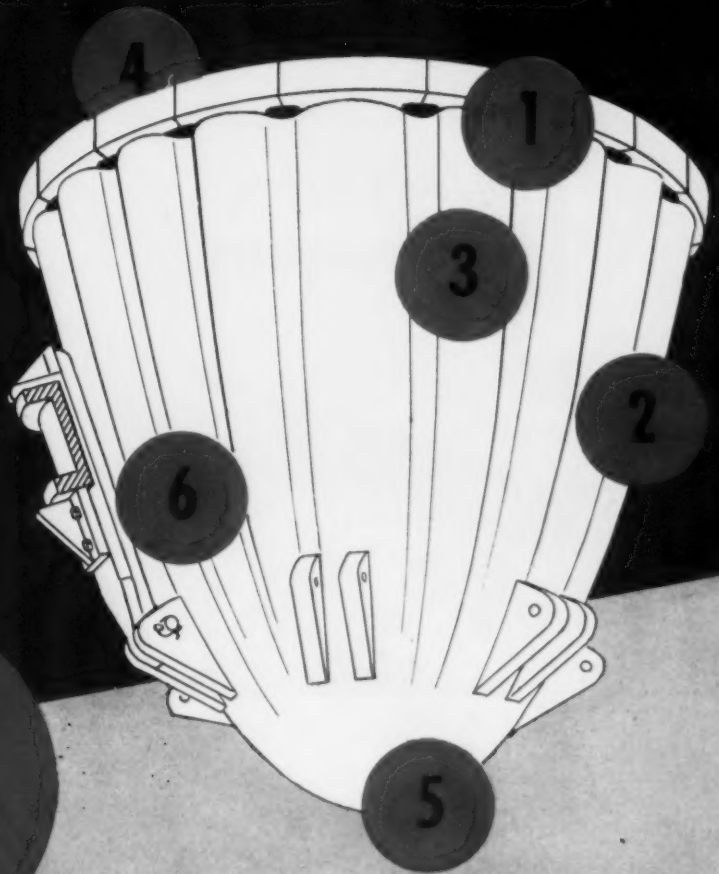
GISHOLT MACHINE COMPANY
Madison 10, Wisconsin

THE GISHOLT ROUND TABLE
represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

JOHNSTON CINDER POTS

have these features . . .



because you asked for them

JOHNSTON CINDER POTS setting trend to corrugated pots offer these developments

1. **Distorting effect of unequal expansion and contraction is resisted by EXPANSIBLE RIMS.**
2. **Cracking and inward creep are prevented by CURVED SIDEWALLS.**
3. **Radiating surface and cooling speed have been increased by CORRUGATIONS.**
4. **Capacity of pots now in service runs from 75 TO 500 CUBIC FEET.**
5. **"Stickers" are prevented by optional BOTTOM COATING OF COPPER.**
6. **Support strain at critical section of pots relieved by BOTTOM SUPPORT BRACKETS.**

The unusual features of Johnston Cinder Pots are features that you, the users of our Cinder Pots, have asked for. They are the result of much research and study of your slag disposal problems.

Johnston Patented Cinder Pots have been developed so that they are adaptable to your specific plant requirements—from small units for use with electric furnaces to giant thimbles for blast furnace and open hearth operations.

We will be glad to discuss your slag disposal problems, and help you put Johnston Cinder Pots to work correcting them. For full information, wire, write, or call:

MACKINTOSH-HEMPHILL CO.

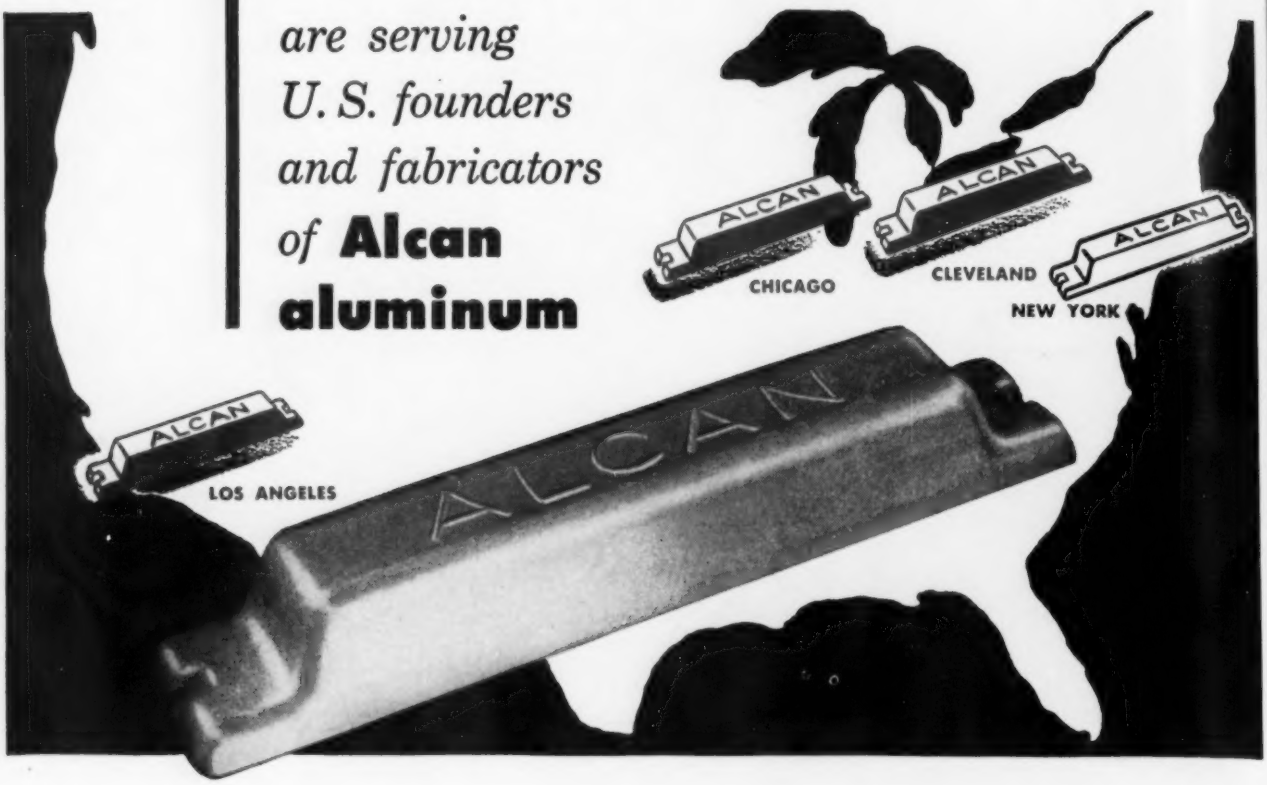
PITTSBURGH 3, PENNSYLVANIA

HEmlock 1-3000

MACKINTOSH-HEMPHILL PRODUCTS INCLUDE: rolls . . . steel and special castings . . . completely integrated strip mills . . . heavy duty engine lathes . . . the new Mackintosh-Hemphill rotary straighteners . . . slag-handling equipment . . . shape straighteners . . . end-thrust bearings shears . . . levellers

3 MORE OFFICES

are serving U. S. founders and fabricators of **Alcan aluminum**



You know what's happening to the demand for aluminum. Up and *up* it's gone, yet this is still only the beginning. For aluminum—lightweight, nonrusting, strong, easy to fabricate—is proving its desirability in new uses every day.

To help meet your needs for this modern metal, our associate the Aluminum Company of Canada, Ltd., is constructing power and smelting facilities in Quebec for producing 130,000,000 more pounds . . . and facilities in British Columbia for producing 200,000,000 more pounds of aluminum per year.

For the convenience of our customers in important U.S. industrial areas, we have opened additional offices—in Cleveland, Chicago, and Los Angeles. Their addresses appear below.

ALUMINUM IMPORT CORPORATION

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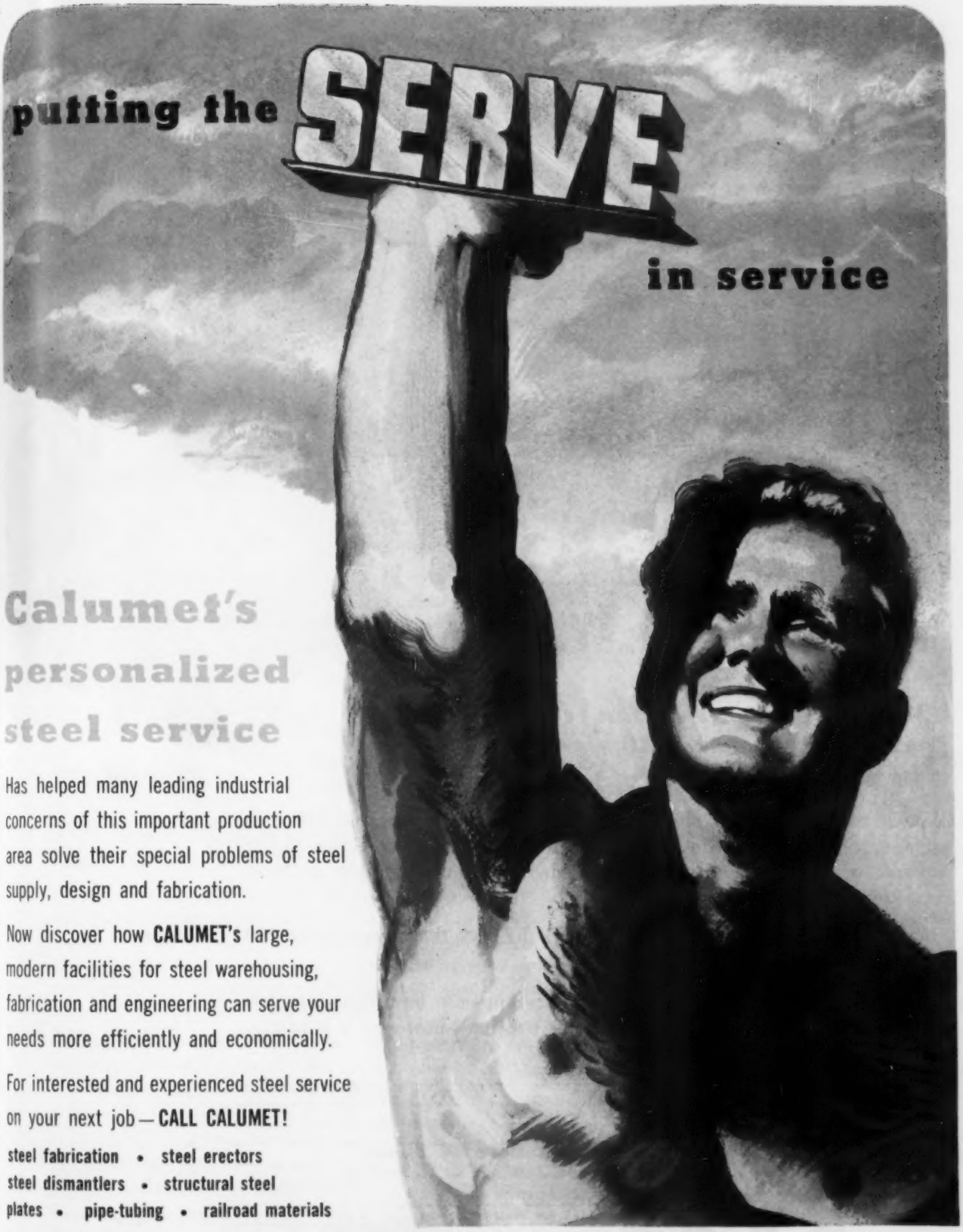

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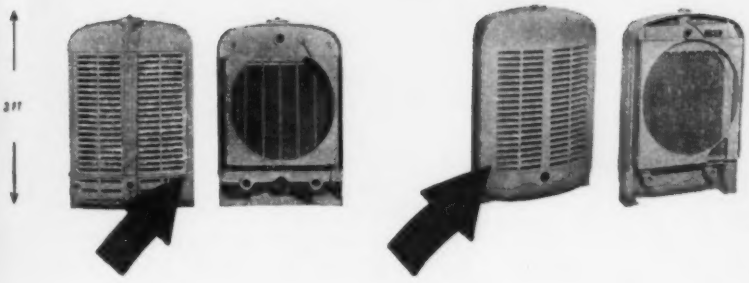
The trend is to more stampings WITH Bliss PRESSES



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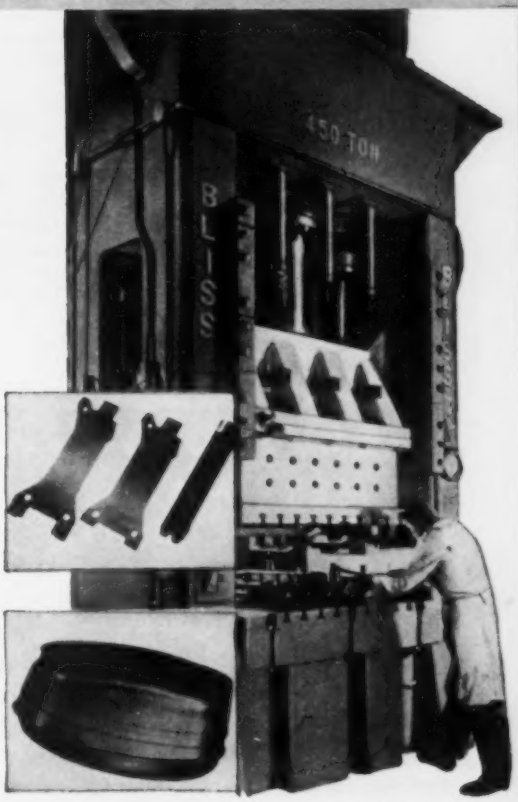

Shown here are the second and third forming operations on radiator side members (inset, top). A third die handles initial piercing. A Bliss hydraulic cushion ejects the stamping... is also used as blankholder to draw the shell. Shells are center-split to form top and bottom of radiator housings (inset, bottom).

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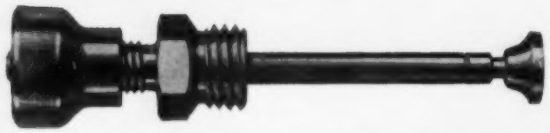

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- Standard Model Pictured has ⅜" Bar . . . Applies pressure up to 100 pounds.

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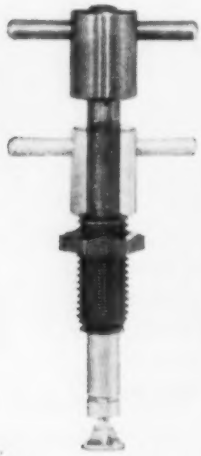

This Heavy-Duty Unit is of the same general description as given above, but instead of adjusting the handle to the thread, all positioning is applied on the thread. The Bar is heaver, ⅝". Applies pressure up to 300 pounds.

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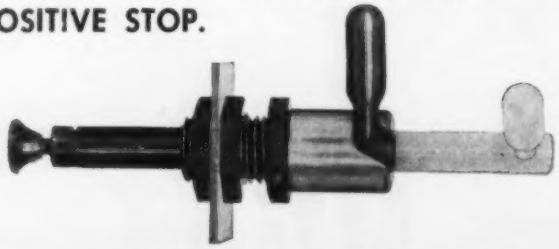

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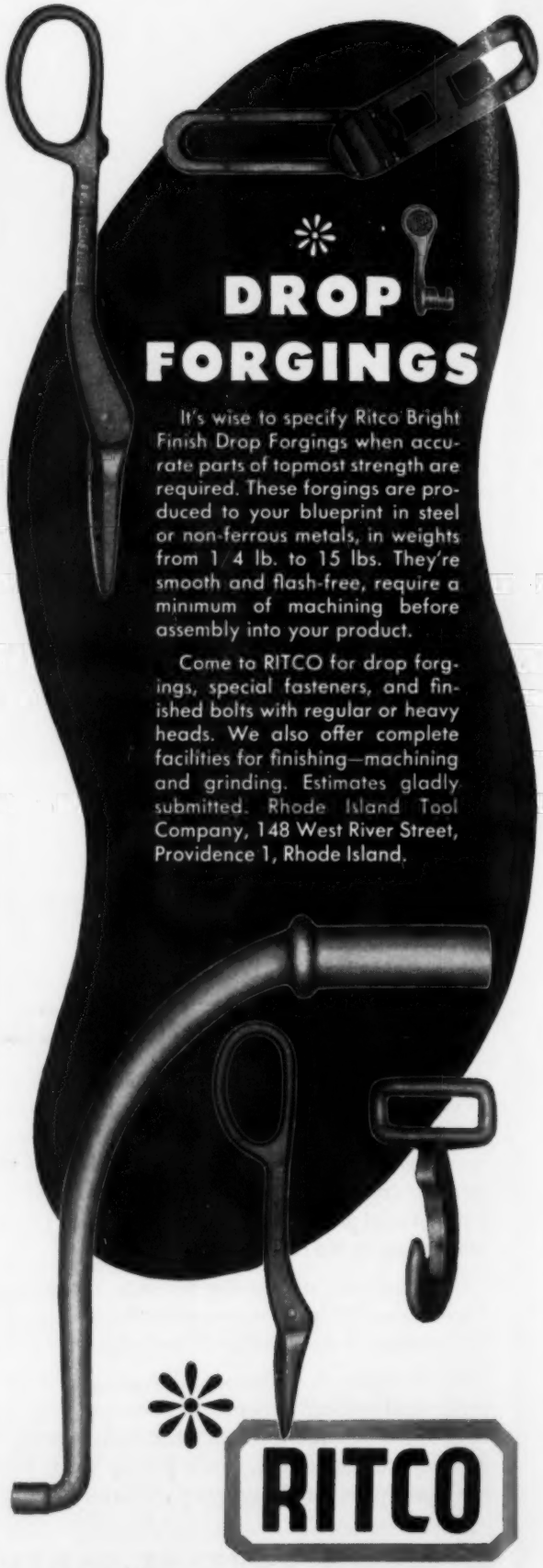

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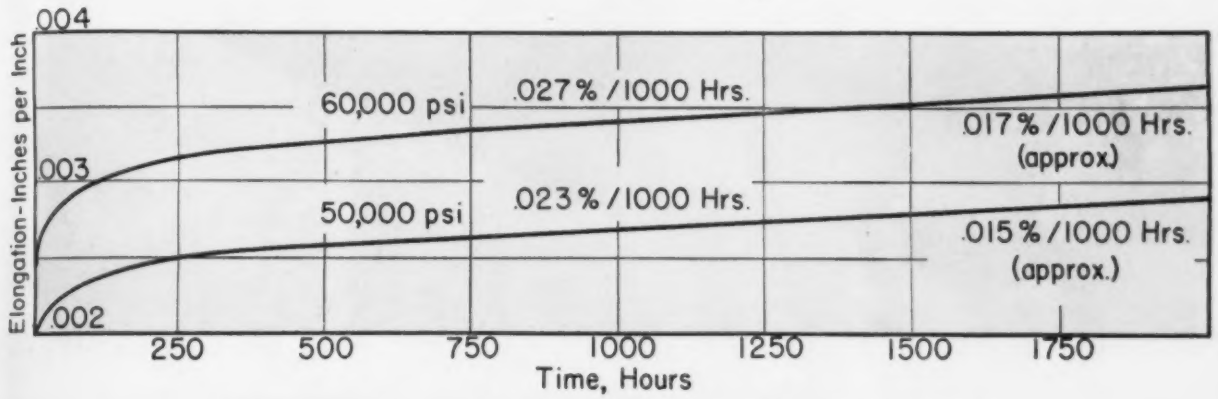

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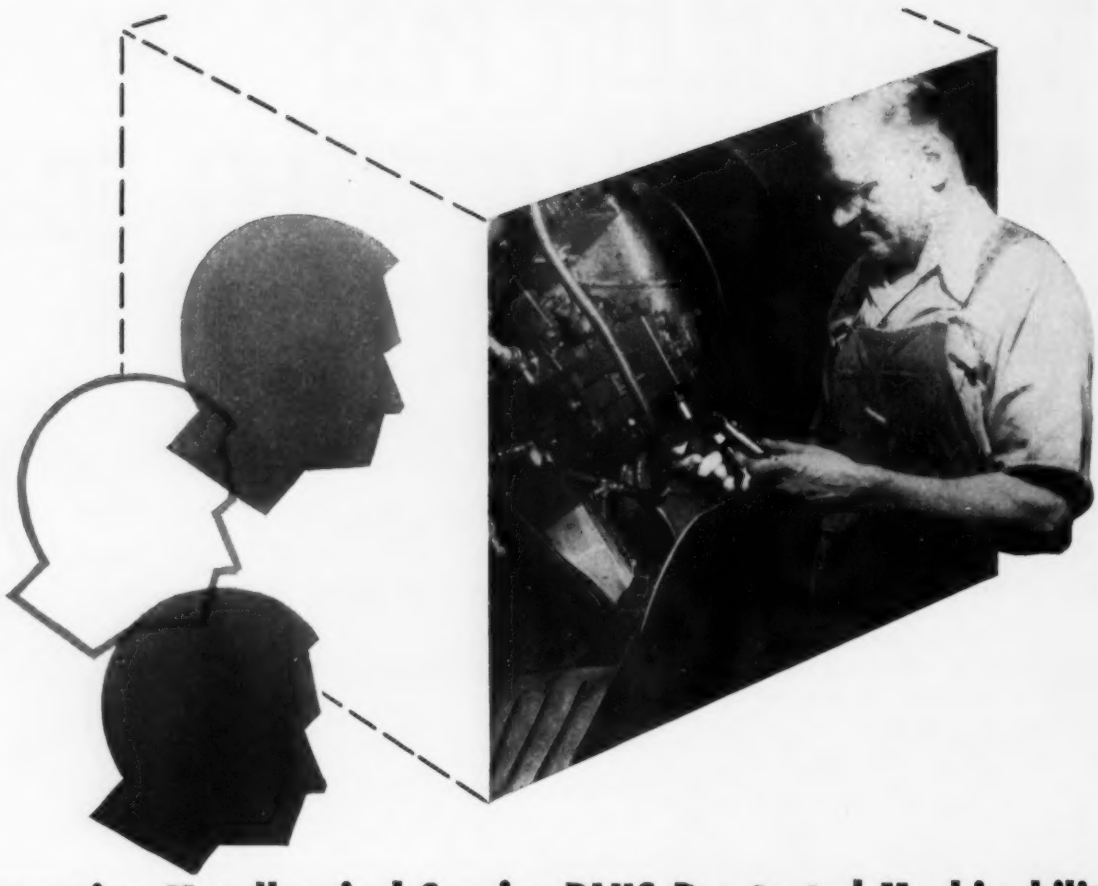

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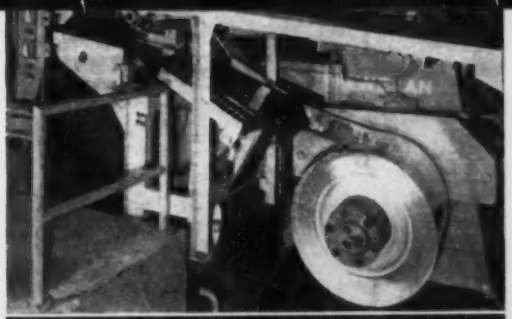

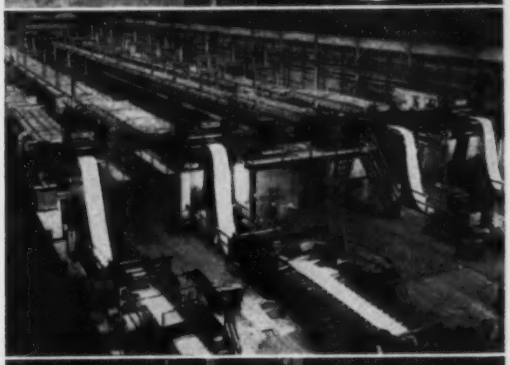

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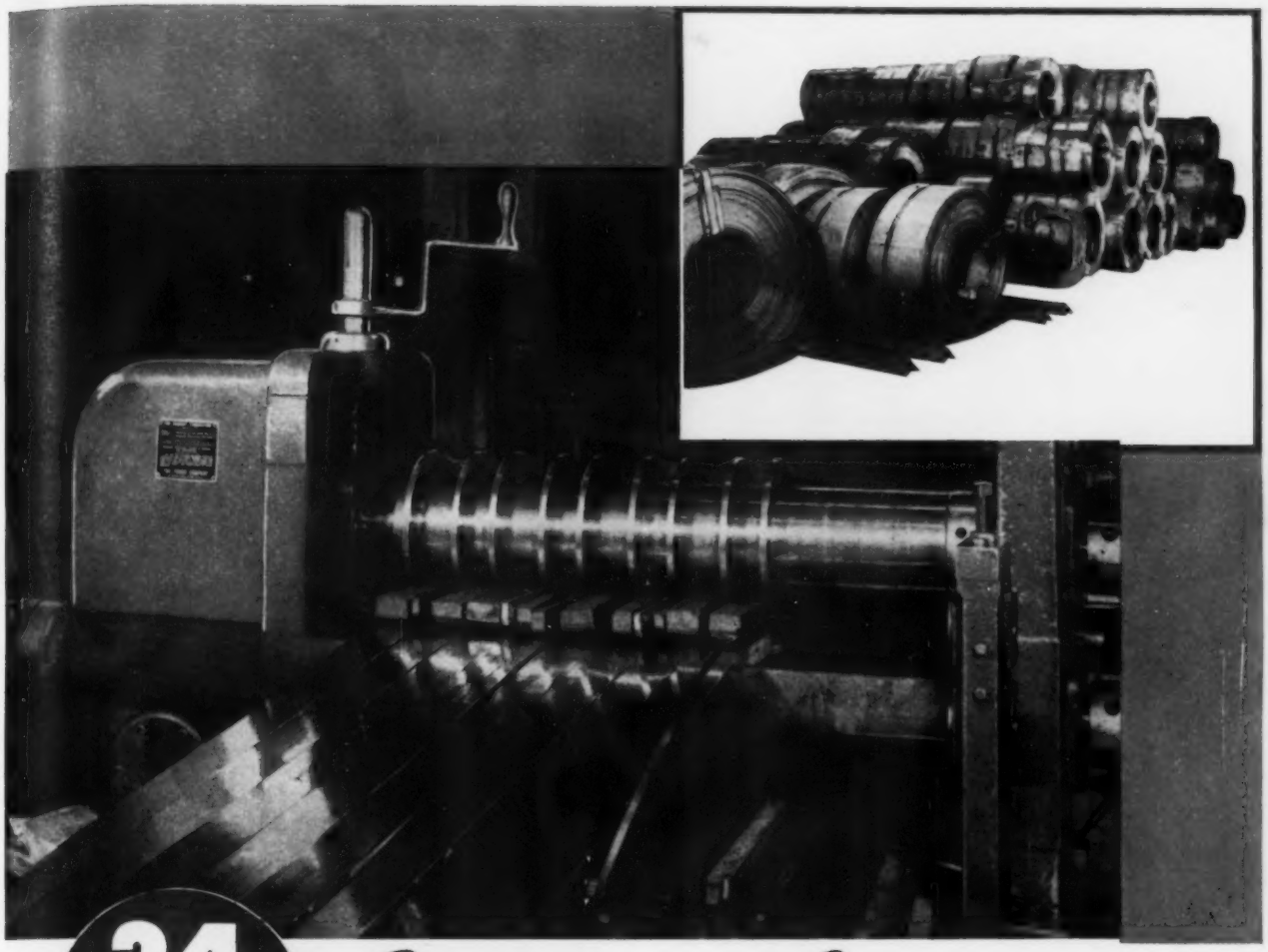

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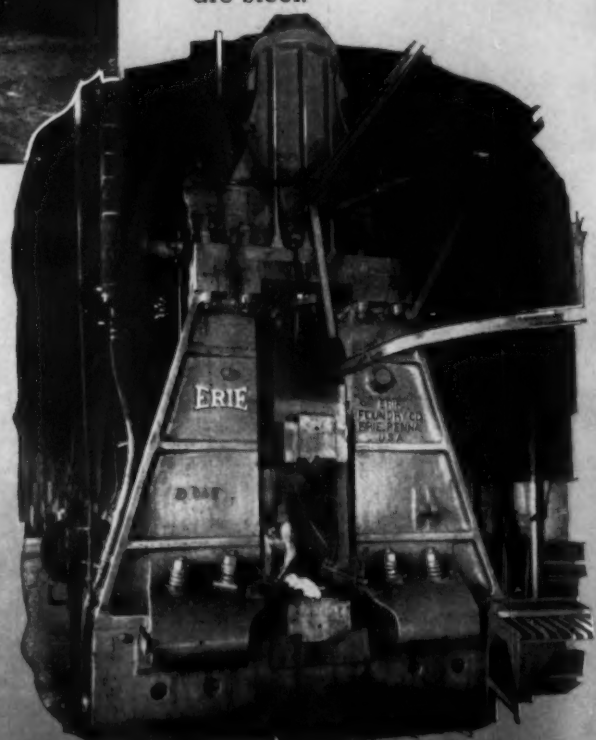

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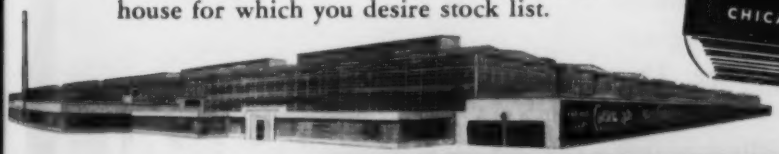

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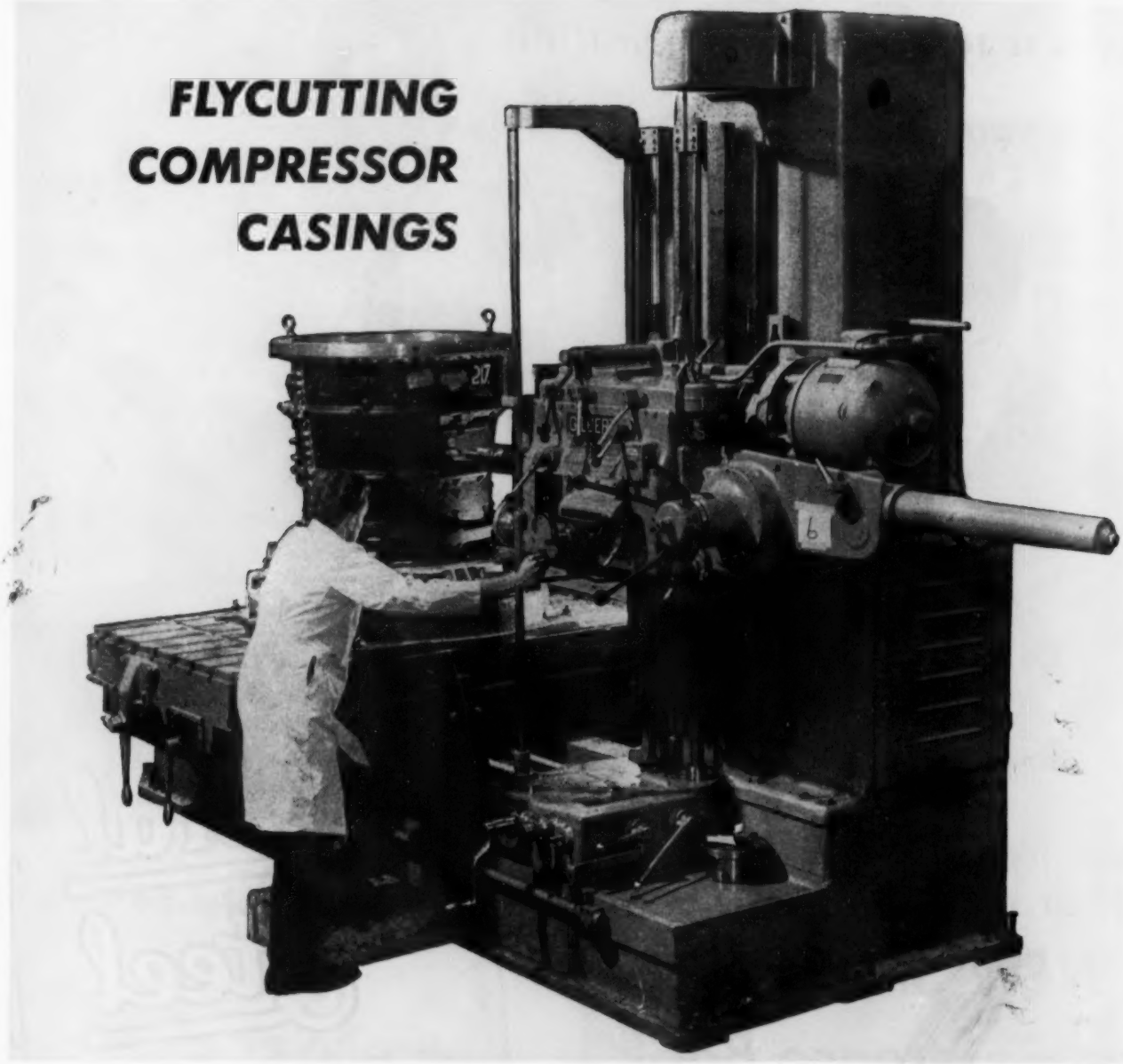

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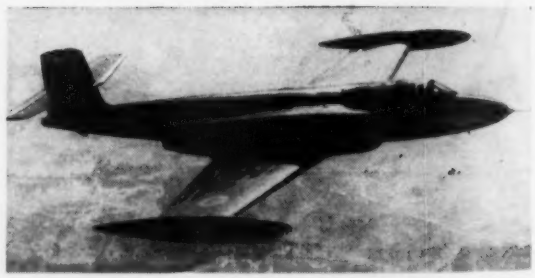

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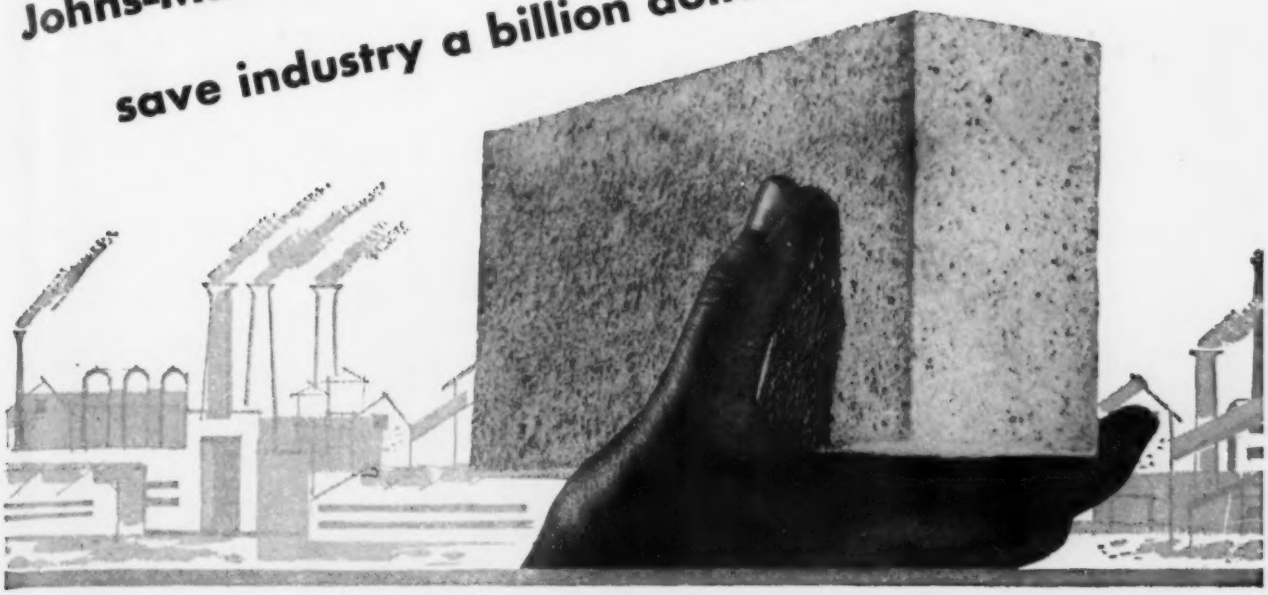

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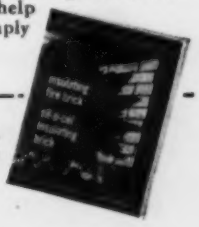
Save Fuel with J-M Aggregates and Fills

These lightweight insulations are used as fills to conserve heat in irregular spaces where other forms of insulations cannot be economically applied. They are also used as aggregates for mixing with other materials to form insulating refractory concrete.

*Reg. U. S. Pat. Off.

Send for your free copy! This new booklet IN-115A gives full details about J-M insulating materials for service through 3000F. To find out how they can help cut your fuel costs, simply mail coupon.



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PLYMOUTH LOCOMOTIVES

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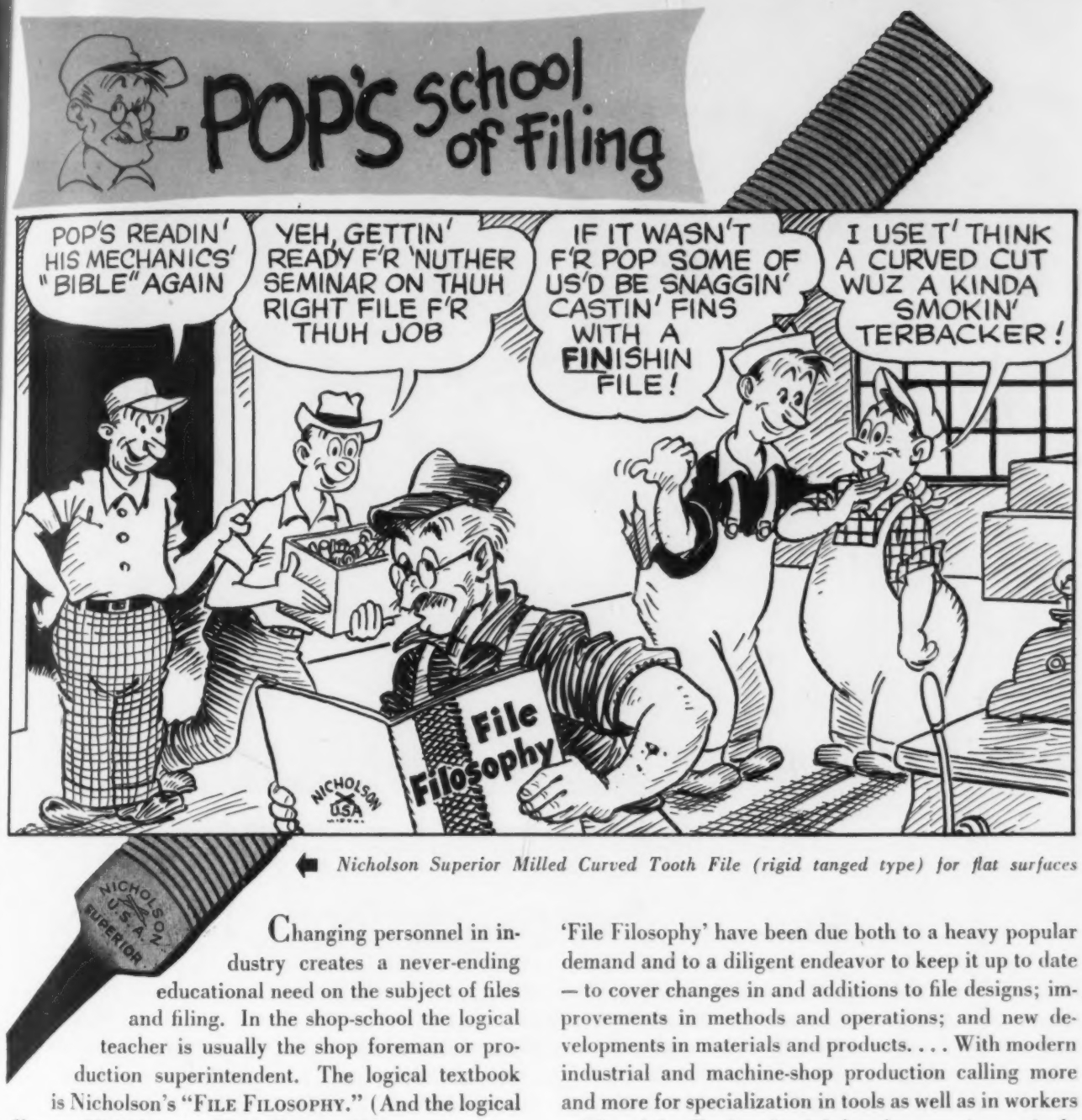
POP'S school of Filing
POP'S READIN' HIS MECHANICS' "BIBLE" AGAIN
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IF IT WASN'T F'R POP SOME OF US'D BE SNAGGIN' CASTIN' FINS WITH A FINISHIN FILE!
I USE T' THINK A CURVED CUT WUZ A KINDA SMOKIN' TERBACKER!
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"File Filosophy" has become universally accepted as an authority and practical guide in the art of filing. From its *16th edition* we quote:

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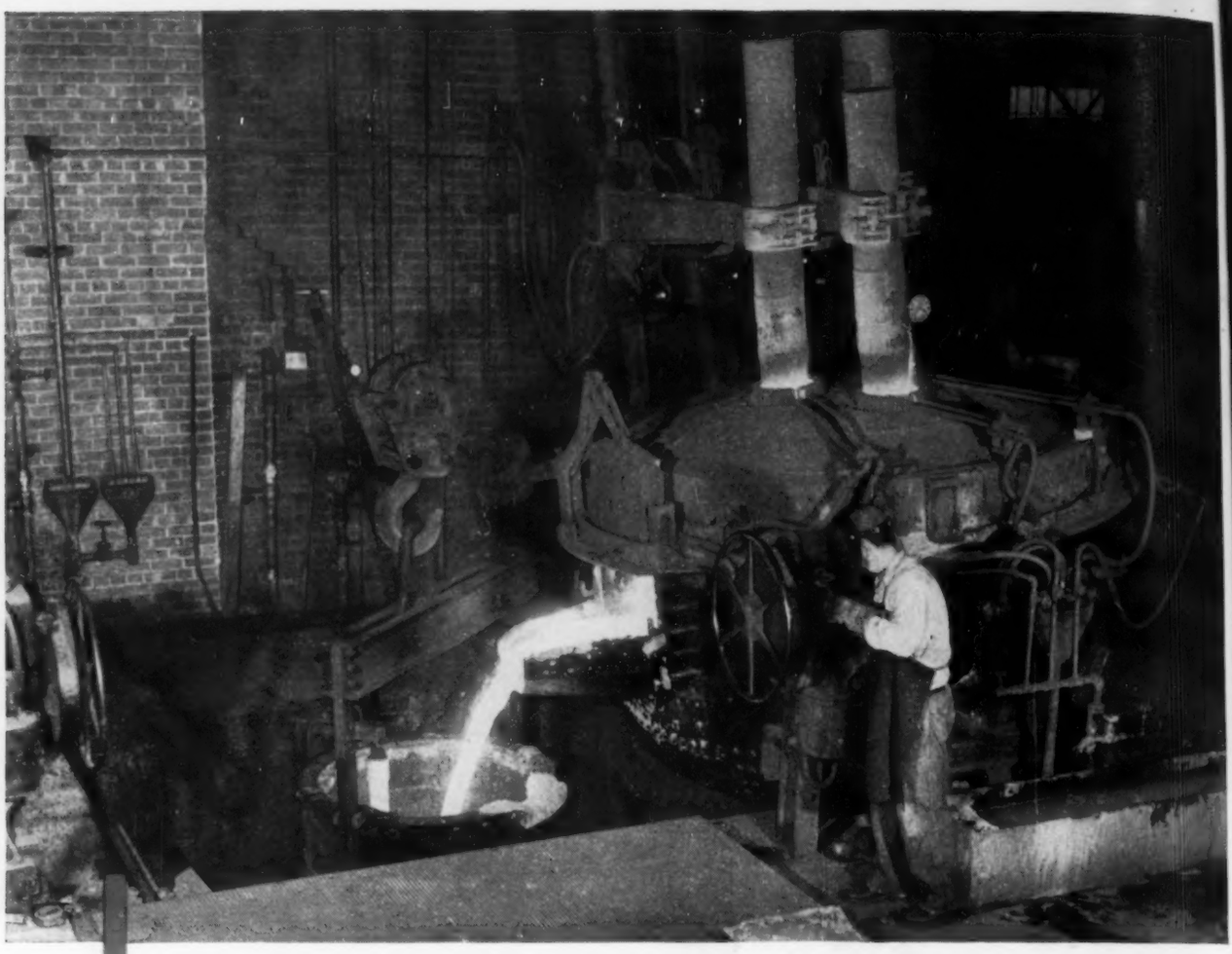

29-year-old Lectromelt Furnace still hard at work for Dibert, Bancroft and Ross Co., Ltd. of New Orleans, manufacturers of sugar mill machinery, dredge boat machinery and electric steel castings

"29-year-old Furnace performs like new"

"After 29 years of trouble-free service this Lectromelt* C-18 Furnace looks only a year old. It performs as well as when installed, turning out 8-ton heats in three hours."

Today's Lectromelt Furnaces are masterpieces of engineering compared to this C-18. And you get even greater durability and dependability.

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Manufactured in . . . CANADA: Lectromelt Furnaces of Canada, Ltd., Toronto 2 . . . ENGLAND: Birlec, Ltd., Birmingham . . . FRANCE: Stein et Roubaix, Paris . . . BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege . . . SPAIN: General Electrica Espanola, Bilbao . . . ITALY: Forni Stein, Genoa. JAPAN: Daido Steel Co. Ltd., Nagoya

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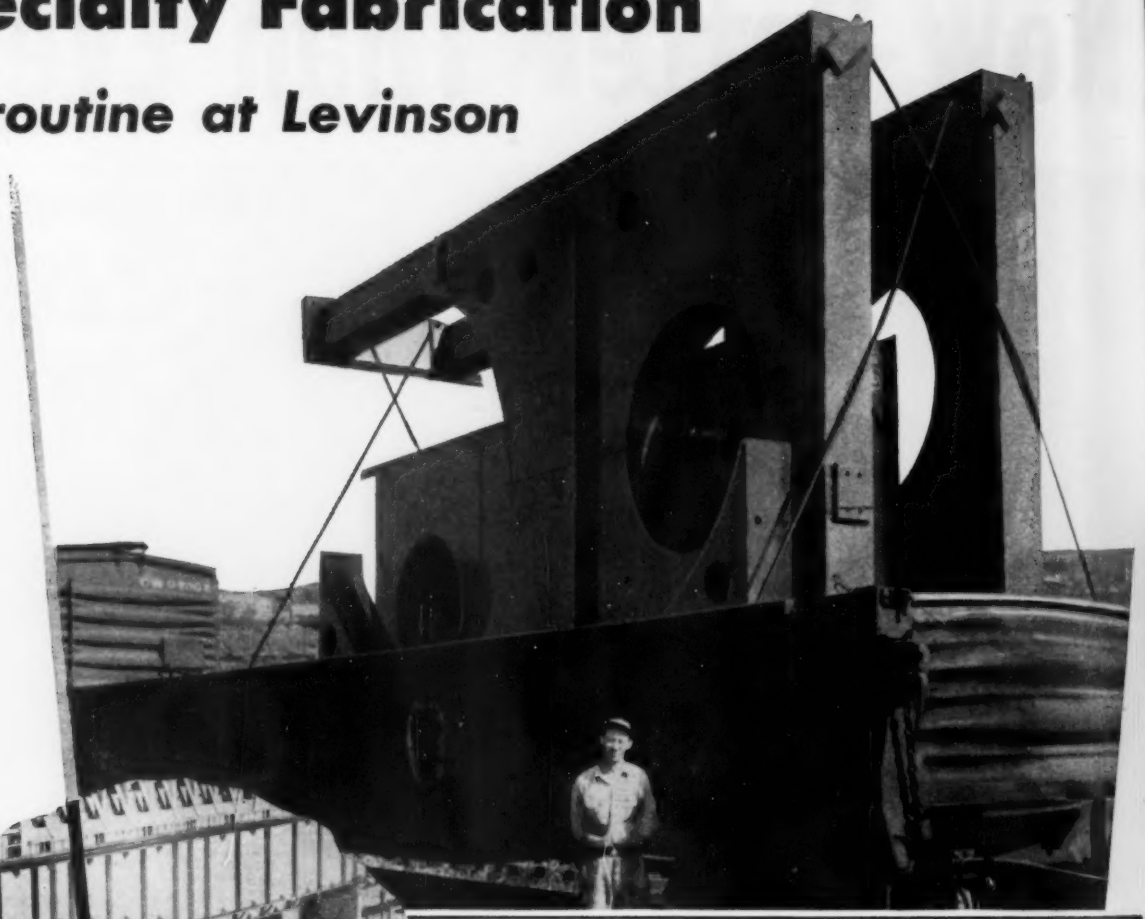

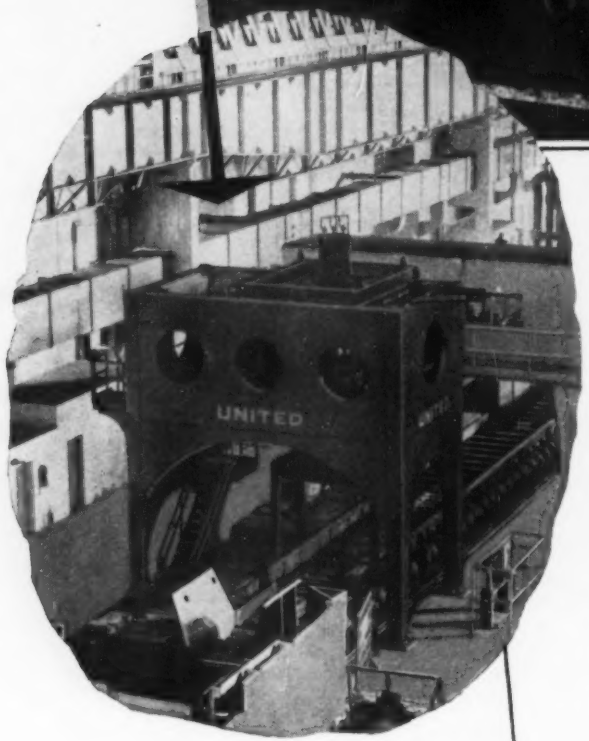

In addition to regular structural steel for buildings . . .

. . . Levinson fabricates steel for coal tipples, coke ovens, industrial furnaces, conveyors, and special jobs like the ingot turner shown here.

The Levinson shops have the "know-how" and the equipment to turn out fabricated beams and columns for simple construction or highly complex chute and hopper work of the most exacting requirements.

You can look to Levinson for high-quality fabricated steel regardless of the nature of the work.

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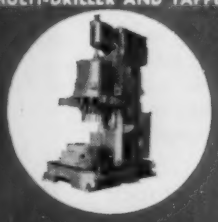
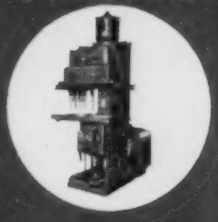
ENGINEERED FOR QUALITY AND QUANTITY PRODUCTION

ADJUSTABLE SPINDLE MULTI-DRILLER AND TAPPER

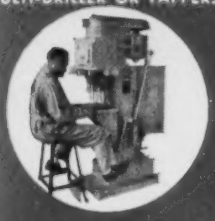


MEDIUM SIZED VERTICAL DRILLER AND TAPPER

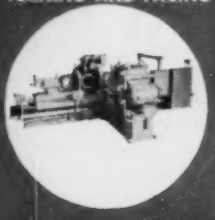
HIGH-SPEED MULTI-DRILLER OR TAPPERS



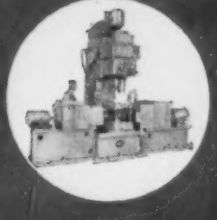
A-33 LIGHT SENSITIVE MULTI-DRILLER OR TAPPERS



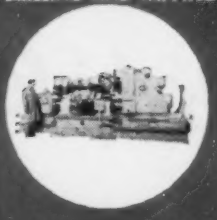
2-WAY BOREFACE FOR BORING, TURNING AND FACING



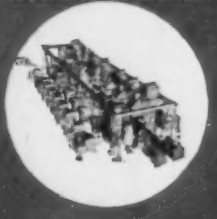
3-WAY HOLETAPPER WITH INDIVIDUAL LEAD SCREWS



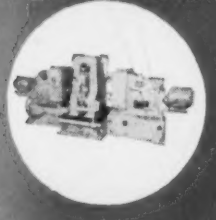
HOLESTEEL 2-WAY FLOOR TYPE FOR DRILLING AND TAPPING



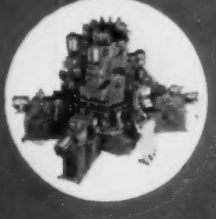
HOLEWAY AUTOMATIC PROCESSING MACHINES



2-WAY HOLEUNIT FOR DRILLING, BORING, REAMING AND TAPPING



STATION TYPE MACHINES



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"I could see the corpsman kneeling over me. The blood plasma was running down through a tube into my arm and he said everything was going to be O.K. I was walking across an enemy mine field in Seoul when one exploded and a piece of shrapnel caught me in the leg.

"'Got enough of that stuff?' I asked him, pointing to the blood. 'I guess we never have enough,' he said, 'but you can thank *somebody* for this pint.'

"How do you thank 'somebody' for blood? For saving your life? When I got back home, I discovered the answer at my local blood donor center. There's only *one* way to say thanks—by giving some of your own blood."

"How do you thank 'somebody' for Blood?"

Yes, all kinds of people give blood—for all kinds of reasons. But whatever *your* reason for giving blood, this you can be sure of: Whether your blood goes to a combat area, a local hospital, or for Civil Defense needs—this priceless, painless gift will some day save an American life!

Business Executives!

✓Check These Questions!

If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

- ☐ Have you given your employees time off to make blood donations?
- ☐ Do you have a Blood Donor Honor Roll in your company?
- ☐ Have you set up a list of volunteers so that efficient plans can be made for scheduling donors?
- ☐ Have you arranged to have a Bloodmobile make regular visits?
- ☐ Has your management endorsed the local Blood Donor Program?
- ☐ Have you informed employees of your company's plan of co-operation?
- ☐ Was this information given through Plant Bulletin or House Magazine?
- ☐ Has your company given any recognition to donors?
- ☐ Have you conducted a Donor Pledge Campaign in your company?

Remember, as long as a *single* pint of blood may mean the difference between life and death for *any* American . . . the need for blood is *urgent!*

Give Blood Now—Call Your Red Cross Today!

National Blood Program

MILLION DOLLAR BABY

at a bargain price

MANIPULATOR
The years of research which perfected this heavy-duty machine resulted in a new invention.

MANIPULET
Outgrowth of the Manipulator, this new device handles smaller pieces in less space and requires lower capital investment.

Salem-Brosius is proud to announce MANIPULET, an ingenious new device for furnace charging and drawing, transporting, and hammer or press manipulating of blanks and billets up to 1,500 pounds. This machine is literally the by-product of the many years of research which perfected its larger relative, yet is scaled down in cost to fit smaller and less arduous forging operations. It is truly a "million-dollar baby at a bargain price." Like the big Brosius Auto-Floor Forging Manipulator, its movements under hammer or press are extremely sensitive. It raises and lowers a forging piece, tilts it up or down, and rotates it . . . in fact, the Manipulet does everything possible with chain hoist and porter bar with far greater speed, safety and precision. Because of its unique ability to move into position, grasp and carry, while the operator remains at a safe distance, its use has already been suggested for handling other relatively heavy objects such as gas cylinders and boxes of radio-active material. If the Manipulet seems to fit your materials-handling problem—either forging or otherwise—please write to us for further information.

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We can learn from bankrupt Micawber

"MY advice, Copperfield, you know. Annual income twenty pounds, annual expenditure nineteen-nineteen-six, result happiness. Annual income twenty pounds, annual expenditure twenty-ought-six, result misery. The blossom is blighted, the leaf is withered—in short you are forever floored. As I am!"

This is probably the most famous financial counsel in all English literature, offered a hundred years ago by Charles Dickens' character the bankrupt Micawber to the hero David Copperfield. As advice it is just as good in 1953 as it was in 1849, and just as sound for a nation as for an individual.

In 17 of the last 20 years, Uncle Sam has followed Micawber's practice, not his advice. Our national balance sheet has been, figuratively, "annual income twenty pounds, annual expenditure twenty-ought-six". Ahead of us as a nation, if we continue this irresponsible policy, is Micawber's dire predicament, "blossom blighted, leaf withered—forever floored".

There is no sane reason why the world's richest nation should continue to live the financial life of a profligate bankrupt. It is time now to set our house in order. The program called for is simple: (1) Eliminate waste and extravagance in government spending; (2) Balance the Federal budget; (3) Control the national debt and reduce taxes.

By such positive action we can protect future happiness—and prevent misery—for ourselves, our children and our children's children.

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General Offices--Youngstown 1, Ohio
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MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS

RAILROAD TRACK SPIKES - CONDUIT - HOT AND COLD FINISHED CARBON AND ALLOY BARS - PIPE AND TUBULAR PRODUCTS - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - RODS - SHEETS - PLATES.

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Leading manufacturers throughout the country have chosen Weirzin for the many fabrication economies it offers. They have found Weirzin especially adaptable to deep drawing and forming because the zinc coating remains intact and of even thickness. It does not peel or flake and forms an impervious protective coating, safe from underfilm corrosion. But the economies that Weirzin offers do not stop here. Beneath the zinc coating is Weirton's cold-rolled steel, noted for ductility and uniformity of gauge—assuring you of ease-of-fabrication with minimum rejects.

When the job calls for difficult deep draws specify Weirzin and get the advantages of better quality and appreciable manufacturing economies.

WEIRTON STEEL COMPANY

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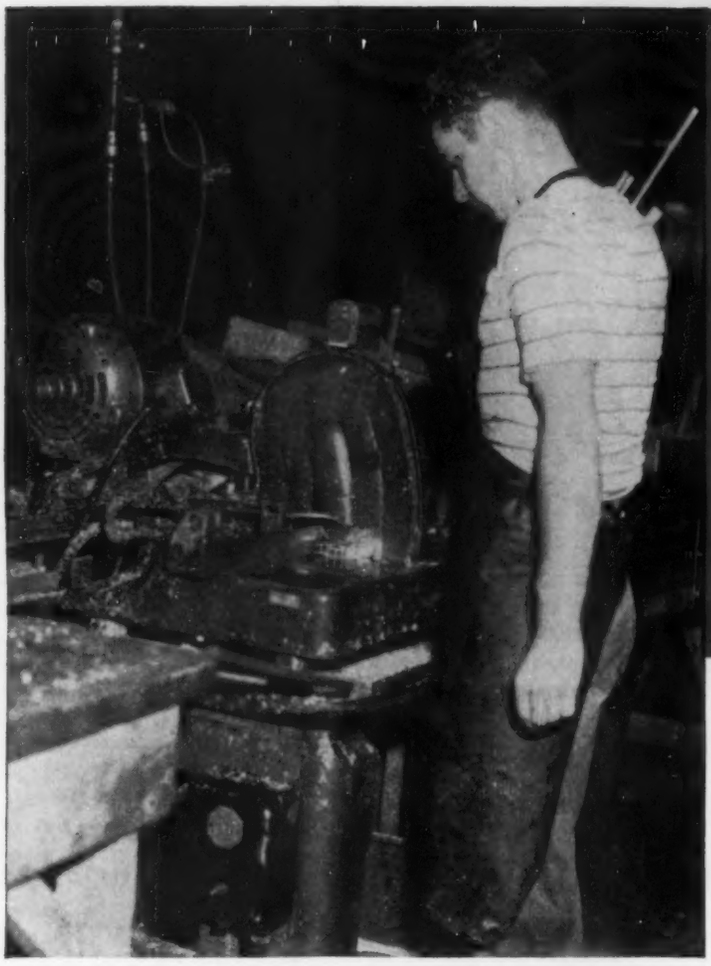
NATIONAL STEEL CORPORATION



At Orange Screen Co., with an output of 900 pieces per hour, cost of making mitre cuts on aluminum frames on double Delta cut-off saws is only 2.9 cents each, including all charges for depreciation, interest on investment in tools, maintenance, power and labor.

DELTA Cut-Off Saws mitre-cut aluminum frames for 2.9¢* each

*Includes all charges for depreciation, interest on investment in tools, maintenance, power and labor

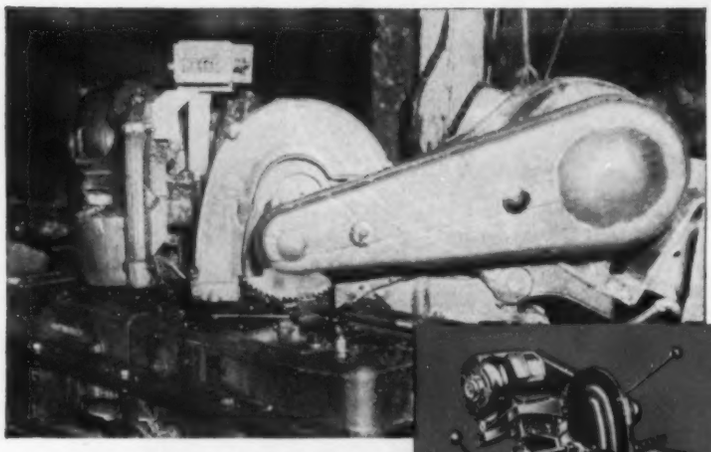
HERE'S HOW ORANGE SCREEN CO. SAVES

Delta abrasive cut-off saws set in pairs and specially tooled make the mitre cuts on both ends of aluminum window frame members at the same time at a cost of 2.9 cents per piece at the Orange Screen Co., Dover, N. J.

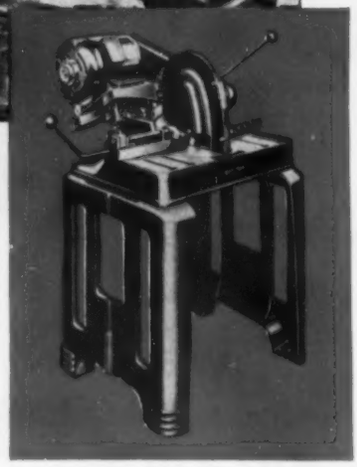
Says E. J. Belliveau, chief manufacturing engineer: *"These set-ups have worked like a charm for nine years. We need their high speed —4000 rpm spindle speed and 10,500 fpm surface speed. An operator—man or woman—can feed an 18' extrusion ½" x ⅜" up to 3" x 1" and turn out 900 pieces per hour. In spite of this fast pace, women operators regularly get incentive production 30 to 80 per cent above base.*

"As a matter of fact, we've standardized on Delta tools all over the plant. Our Delta tools— 20 cut-off machines, 27 drill presses, 3 belt sanders, 5 band saws and 2 circular saws— all have a fine record for accuracy, and with their small initial cost and long life, depreciation is extremely low."

There it is—history repeating itself. Another alert management that's found that low-cost, adaptable, accurate Delta tools out-produce and out-profit far more costly tools. It's easy to find out how you, too, can get these production savings. Talk to your Delta dealer listed in the yellow pages of your phone book under "Tools" or "Machinery." And send for the most useful tool catalog you can have in your desk—Delta AB-Catalog. Delta Power Tool Division, Rockwell Manufacturing Co., 640 C North Lexington Ave., Pittsburgh 8, Pa.



Orange Screen Co. keeps blades sharp, uses 10" steel blades that average 36,000 cuts between sharpenings. Maintenance in nine years has been negligible, they report.



DELTA MILWAUKEE

DELTA QUALITY MAKES THE DIFFERENCE

DELTA QUALITY POWER TOOLS

Another Product of **Rockwell**

Packard engineers saved $1.74 per part when this ultramatic transmission shaft was redesigned from a forging to a steel shaft and casting. They saved $74,325 in equipment and tooling, too.
Auto parts manufacturer saves $2000 monthly brazing shanks on hi-speed lathe tool stubs. Formerly these $17.00 tools had to be discarded when worn down to 4". Now they use up 100% of the tool.
Here's how you can save time and money with
TOCCO*
Induction Brazing
American Emblem Co. reduced solder cost 50%; cut repairs and rework due to misalignment of parts 98% and doubled output when they switched from hand soldering to automatic TOCCO soldering.
Commercial Shearing and Stamping Co. changed from welding to TOCCO brazing these hydraulic cylinder assemblies and doubled production while cutting unit costs 50%.
Nash Motors changed from a hand torch to TOCCO Induction brazing of drain flanges to oil pans. Labor and material costs dropped from $12.75 to $4.90 per hundred—a cut of 60%. Hourly production more than tripled.
Norris-Thermador Corporation switched from arc welding to TOCCO Induction Brazing of this bushing and clamp assembly. Result: costs reduced from $46.44 to $31.73 per 1000 parts—a 32% saving.

If your product involves brazing, heat-treating, forging or melting of ferrous or non-ferrous metals, similar savings of time and money can probably be uncovered in your plant, too. A TOCCO engineer is glad to survey your plant without obligation, of course.

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*Trade Mark Reg. U. S. Pat. Off.

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Please send free copy of "Typical Results of TOCCO Induction Brazing and Soldering."

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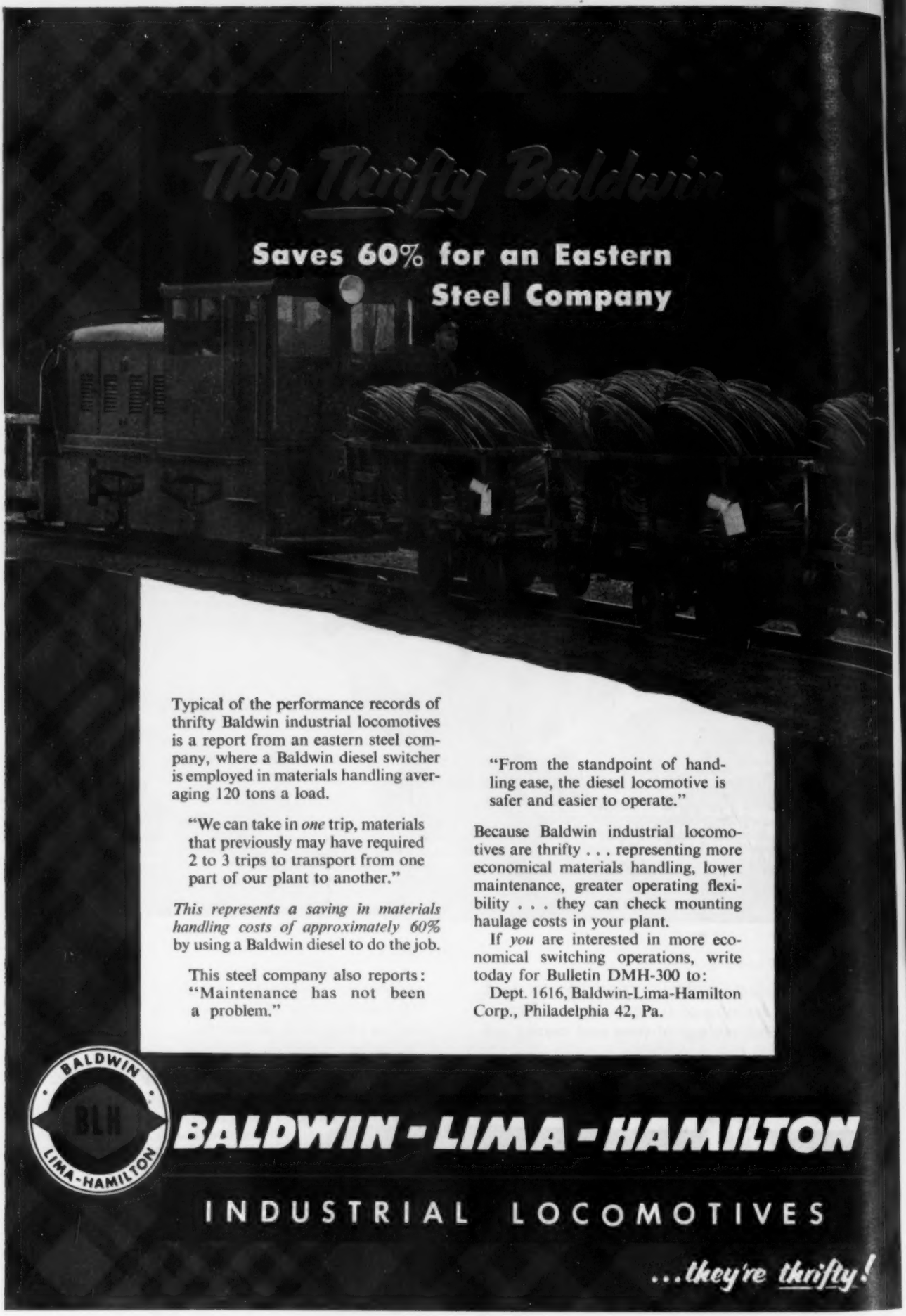

Typical of the performance records of thrifty Baldwin industrial locomotives is a report from an eastern steel company, where a Baldwin diesel switcher is employed in materials handling averaging 120 tons a load.

"We can take in *one* trip, materials that previously may have required 2 to 3 trips to transport from one part of our plant to another."

This represents a saving in materials handling costs of approximately 60% by using a Baldwin diesel to do the job.

This steel company also reports: "Maintenance has not been a problem."

"From the standpoint of handling ease, the diesel locomotive is safer and easier to operate."

Because Baldwin industrial locomotives are thrifty . . . representing more economical materials handling, lower maintenance, greater operating flexibility . . . they can check mounting haulage costs in your plant.

If *you* are interested in more economical switching operations, write today for Bulletin DMH-300 to:

Dept. 1616, Baldwin-Lima-Hamilton Corp., Philadelphia 42, Pa.

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INDUSTRIAL LOCOMOTIVES

. . . they're thrifty!

BIGGEST GIANT OF THEM ALL!

• This new 8,000-ton hydraulic press, designed and built by BIRDSBORO, is located at Lockheed Aircraft Corporation's factory in Burbank, California. It is the largest of its kind in the world. With a total height of 48 feet, of which 12 feet is foundation imbedded in the floor, this huge machine enables Lockheed to produce larger individual parts with heavier sections of new, tougher metals demanded by tomorrow's high speed aircraft. The operator of this giant press controls a force equivalent to the weight of a battle cruiser as he forms components of tough aluminum alloy a half-inch thick and up to ten by 30 feet in size. The giant press is part of Lockheed's five-million dollar expansion program.

designed & built by **BIRDSBORO**

HPL 1-53

BIRDSBORO STEEL FOUNDRY & MACHINE CO., BIRDSBORO, PENNA. HYDRAULIC PRESSES Offices in Birdsboro, Pa. and Pittsburgh, Pa.

•designers and builders of: Hydraulic Presses • Steel Mill Machinery • Crushing Machinery • Rolls • Special Machinery • Steel Castings

1000 heats without a hole...

WITH PERMANENTE 165!

From one of the country's largest steel mills comes this report:

"The Permanente 165 bottom in #19 open hearth furnace producing low-carbon steel is now two years old, has produced 225,000 tons in 1000 heats, and has never had a hole!"

It's another example of the superior performance possible with a Permanente 165 bottom. The odds are that this proved superiority can greatly increase production for *you*.

Among the *20 quality advantages* of Permanente 165 are: high MgO *periclase* derived from high-purity sea water magnesia, and great volume stability because the periclase grains are pre-shrunk and accurately sized.

SEND FOR BOOKLET giving *all* the important advantages of Permanente 165 and the companion material, Permanente 84. Upon request, your Kaiser refractory engineer will promptly offer you research, design and installation service to help you obtain more steel tonnage per year, at lower bottom cost per ton. Call or write principal sales offices: *Chemical Division*, Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California. First National Tower, Akron 8, Ohio.

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Pressure Processing

. . . whoever uses it in their production is a customer or potential customer of **H-P-M**

DIFFICULT SMALL PARTS call for H-P-Ms!

For difficult draws and other forming operations . . . on short as well as long runs . . . Walker Mfg. Company, Ajax Division, finds H-P-M 150 and 200 ton All-Hydraulic Presses ideal.

Starting with one H-P-M, Walker has added three more to keep pace with increased production requirements . . . reflecting real confidence in H-P-M and the presses we build.

If pressure processing is an important part of your production picture . . . it will pay you well to talk shop with an H-P-M engineer. Write today!

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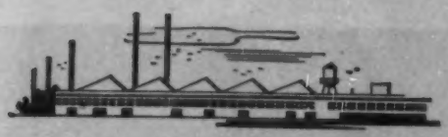
THE HYDRAULIC PRESS MFG. CO.

1006 Marion Road, Mount Gilead, Ohio, U. S. A.

Presses for Every Pressure Processing Application

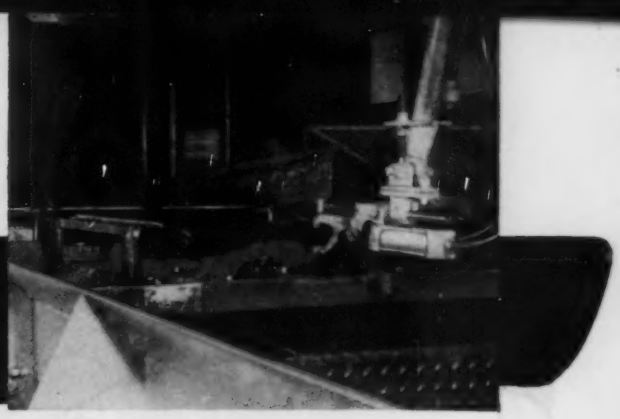


the "ANCHOR MEN" of the production te

DANLY PRESSES *help Fo a*

View of front floor pan stamping line in Ford's new Buffalo Stamping Plant. Both big presses shown are Danly Underdrives. They are placed astride a continuous conveyor line which is part of Ford's remarkable "automation" system of material handling.

...aintain uninterrupted output



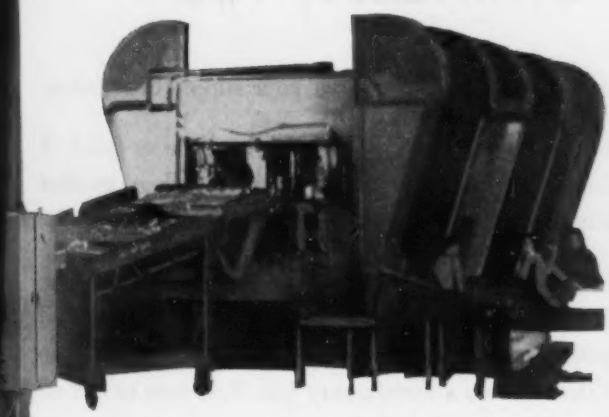
Looking into the dies of a Danly Underdrive Press on the front floor pan stamping line. Note the "iron hand" ready to remove the part after trimming operation is complete. Pneumatically powered and activated by a limit switch, the "iron hand" places the piece on a conveyor for transportation to the next press.

Non-stop production is the watch word in Ford's huge new Buffalo Stamping Plant. Approximately 40% of all Ford stampings come from here . . . the result of peak capacity, minimum cost operation.

Up and down all 19 major stamping lines you'll find Danly Presses . . . each one a vital link in the chain of uninterrupted production. With exclusive features like the Cool Running Clutch and automatic oil lubrication, it's no wonder you see so many Danly Presses in leading stamping plants throughout the country.

Built for top performance, Danly Presses are always ready and able to help you set new *continuous* production records.

Inner door panels are being fed into this Danly Press where trimming and piercing operations are performed. Note how die block hanging on press behind operator is chained to plug in control circuit. Press cannot be inadvertently operated when block is in die opening. Conveyor is controlled by operator's foot switch.



View of inspection operation at end of front floor pan stamping line. Locations of pierced holes in pan are being checked against master profile fixture with plug gauges.

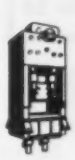
It costs less to run a DANLY PRESS

Single Action Straight Side

Autofeed

Underdrive Single, Double Triple Action

Gap Frame



Double Action Straight Side

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HYDRAULIC METALWORKING EQUIPMENT

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Our metallurgical staff and stainless fabricating specialists are ready to help you look into this matter and to advise you on more readily-available types of stainless that will do a satisfactory job. Feel free to call on us for this specialized help.

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in industrial America ..."

1,500 ton hydraulic press designed specifically for high-speed, heavy-duty die forging and ingot cogging.
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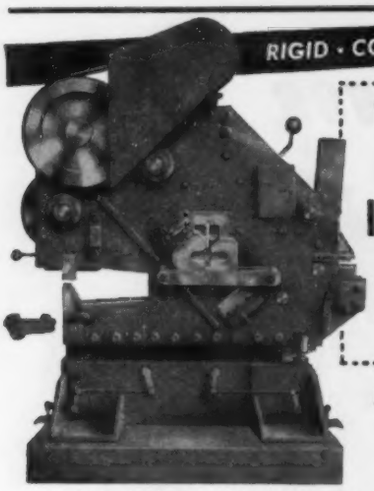
RIGID · COMPACT · EFFICIENT



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- Rigidly built of high tensile steel
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PARTIAL SPECIFICATIONS	T 15	T 25	T 30
Punch capacity	7/8" x 7/16"	1" x 9/16"	1-3/16" x 1/2" or 1-1/16" x 5/8"
Shears Plates	7/16"	1/2"	5/8"
Shears Flats	3-3/16" x 9/16"	3-3/16" x 5/8"	4" x 3/4"
Shears Angles (Square Cut)	3 1/2" x 5/16"	4" x 3/8"	5" x 1/2"
Shears Tees	3 1/2" x 5/16"	4" x 3/8"	4 3/4"
Shears Round	1-13/16"	1 3/8"	1 3/4"
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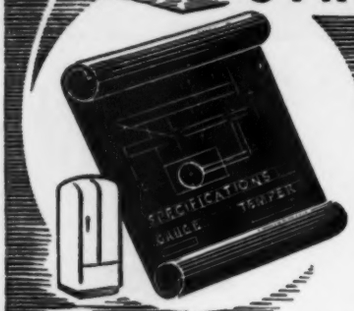

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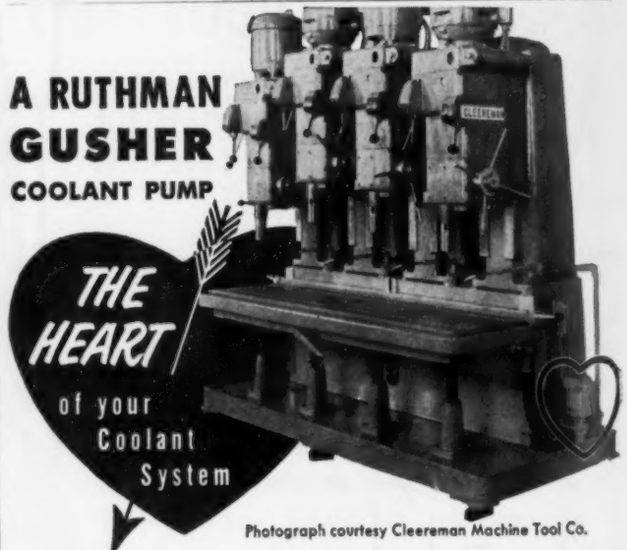

Photograph courtesy Cleereman Machine Tool Co.

You'll go far toward eliminating coolant troubles on your machines when you *specify* Gusher Coolant Pumps. Gushers are precision built! All rotating parts are electronically balanced. Maintenance costs are cut to a minimum. Illustrated is a Model 325 Cleereman Four Spindle Drilling Machine with a Model UL-2106 Ruthman Gusher Coolant Pump.

THE RUTHMAN MACHINERY CO.
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AUTOMATIC HANDLING *plus* CONTINUOUS BROACHING

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Detroit Broach adds a new dimension in broaching economy . . . automatic handling of the work. By eliminating manual loading, production ceilings are raised, costs are lowered and continuous efficiency is assured *independent of the human element.*

The application above—facing the ends and producing a flat on automotive king pins—illustrates typical benefits. Here, Detroit Broach applied a hopper and feed mechanism to a continuous broaching machine and thus eliminated manual loading of the parts. Precision tolerances are consistently held, production runs continuously and costs are at rock bottom. In this application the hopper is loaded manually, however, in many instances the hopper can be fed by conveyor from the previous operation.

On present or proposed broaching operations it will pay you to discuss automation with Detroit Broach engineers. Chances are these broaching specialists will be able to come up with recommendations that will result in considerable savings for you. If you will just drop us a line, the nearest Detroit Broach representative will give you all the details without obligation.

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UNITED STATES STEEL

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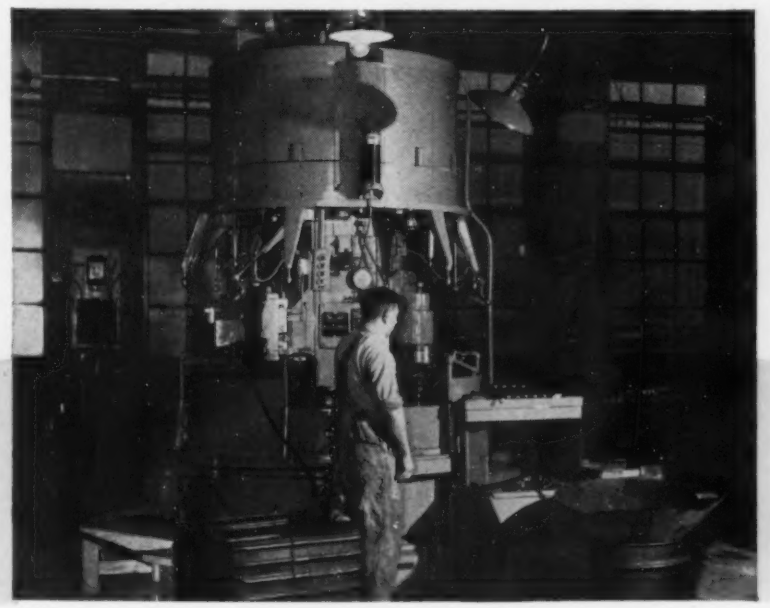
Our new Bullard for the Union Department arrived at the end of April, and was quickly and skillfully unloaded from the flat car that brought it."
Illustrations from Clayton Mark & Company House Organ. "The Mark Times"

Clayton Mark & Company, Evanston, Illinois manufacturers of Complete Water Systems and Supplies realized the potential production possibilities and manufacturing economies obtainable with Bullard Mult-Au-Matic. Quick Action — they wasted no time in getting their machine into operation.

There's a Mult-Au-Matic size for your work. There's potential manufacturing economy in the Mult-Au-Matic Method on your jobs. Whether yours is mass production or shorter runs, let Bullard engineers outline the Mult-Au-Matic application in your plant.



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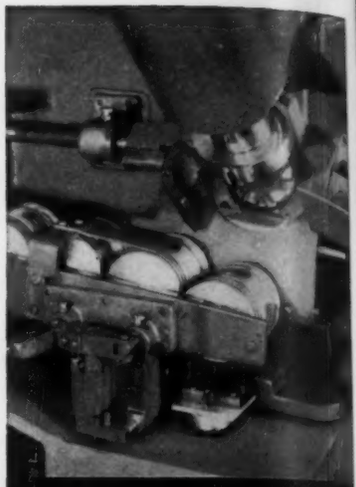
. . . untouched by human hands!

. . . to plus-or-minus .035 oz.!

. . . at 12 per minute rate!

pistons balanced automatically



. . . by this amazing new

Morris

AUTOMATIC PISTON BALANCING MACHINE

For the first time, this MORRIS Mor-Speed Production Machine makes piston balancing 100% automatic. Parts are unloaded automatically from a standard conveyor, processed or rejected and returned to the conveyor "untouched by human hands."

Underweight or grossly overweight pistons are automatically rejected without interrupting the production flow. Depending on a cycle time ranging from 5 to 8 seconds per part, production is 450 to 720 parts per hour varying with the amount of metal to be removed from each piece at 80% efficiency and to a plus-or-minus one gram accuracy limit!

MORRIS Automatic Piston Balancing Machines are used by a number of the major automotive producers. If you have a piston production line, let Morris Engineers show you case history proof of time, labor, money and floor space savings.

Write today for NEW bulletin describing and illustrating the revolutionary MORRIS Piston Balancing Machine.

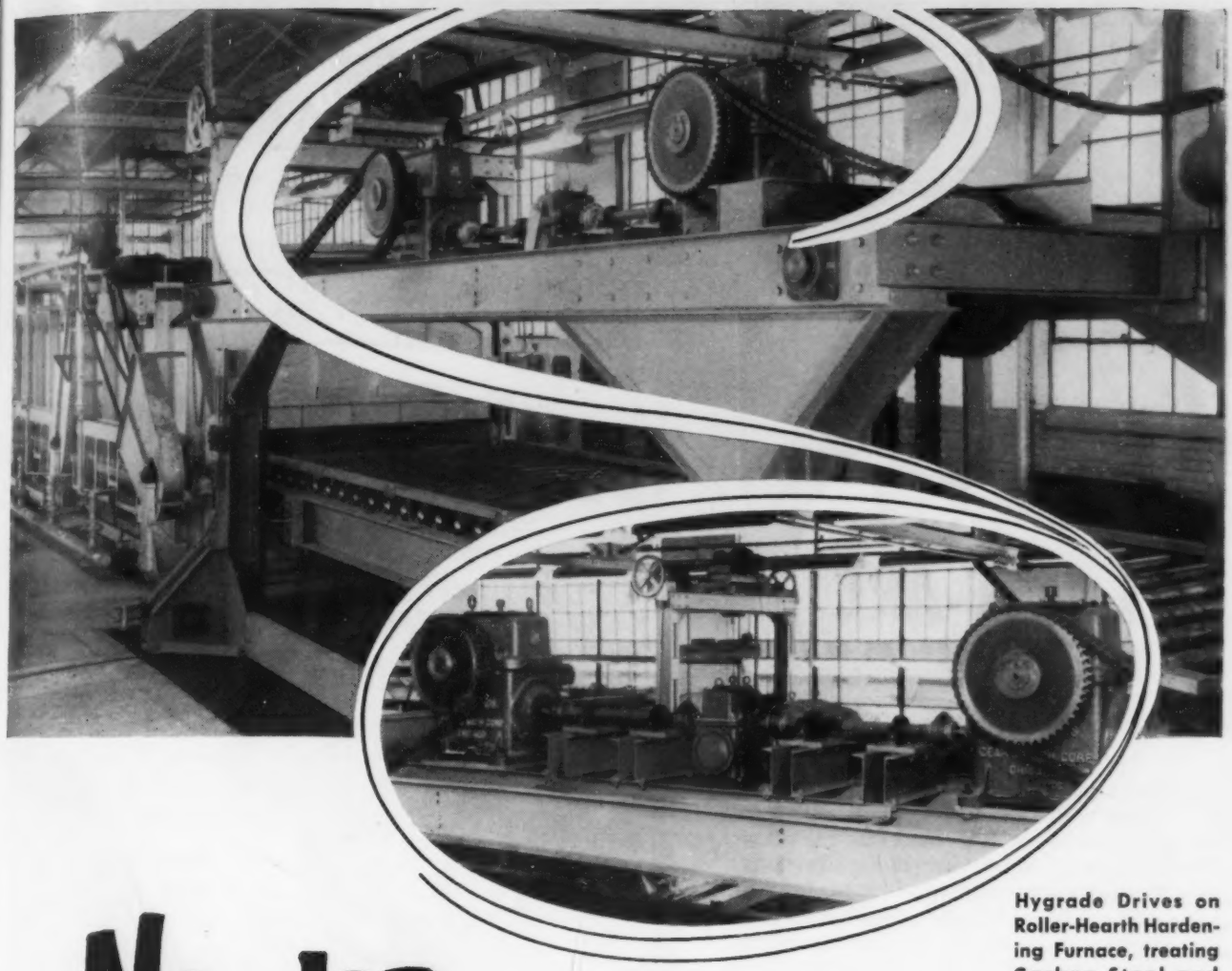
The Morris Automatic Piston Balancing Machine takes only 27.3 square feet of floor space to turn out up to 12 accurately balanced pistons every minute!

a better product at less cost with precision PLUS *production*

Builders of MOR-SPEED Line

Morris

THE MORRIS MACHINE TOOL COMPANY, 935 HARRIET ST., CINCINNATI 3, OHIO



Hygrade Drives on Roller-Hearth Hardening Furnace, treating Carbon Steel and Armor Plate, built by DREVER COMPANY, PHILADELPHIA.

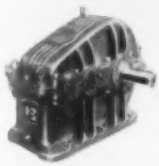
No Job For A Weakling

Handling hot plate is no job for weaklings. This is why the Drever Company chose rugged, powerful Hygrade Drives on this Roller-Hearth Hardening Furnace. These sturdy units not only handle this tough job with ease, but with minimum maintenance.

Wherever you have a speed reduction problem where low cost and rugged dependability are essential, the Hygrade Line of Enclosed Worm Gear Drives offers a solution. Available in a wide range of ratios and h.p. capacities in horizontal and vertical types. Vertical drives are also available with wider low speed bearing span to accommodate long, unsupported output shaft extensions.

FOOTE BROS.

Better Power Transmission Through Better Gears



Maxi-Power Drives

Line-O-Power Drives

Foote Bros.-Louis Allis Gearmotors

Foote Bros. Gear and Machine Corporation
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Chicago 9, Illinois

Please send a free copy of Bulletin HGB on Foote Bros. Hygrade Worm Gear Drives.

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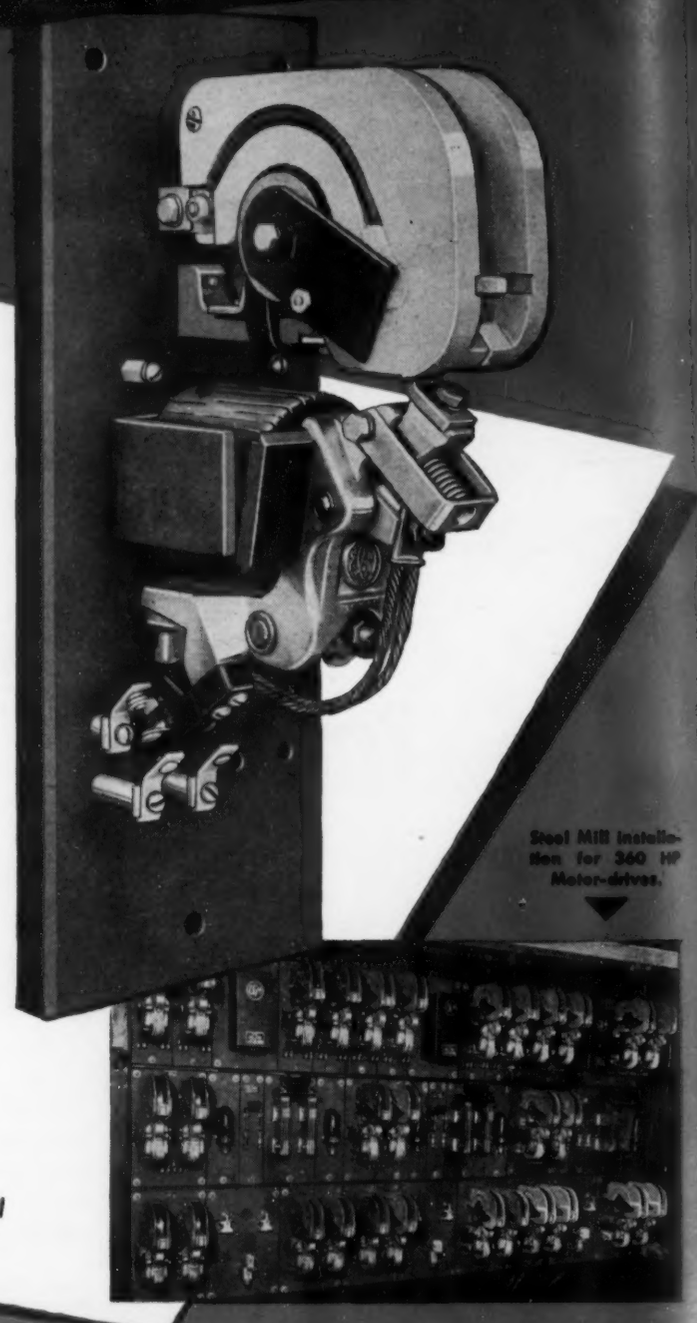

Steel Mill installation for 360 HP Motor-drives.

You can meet production demands better with EC&M Magnetic Controllers, because they are easy to get along with, easy to service on a preventive maintenance basis and low on upkeep.

The LINE-ARC principle keeps costs down and saves maintenance-time. Don't overlook these important advantages when buying mill and crane control:

1. Cool contact operation—longer contact life.
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First report on the new Prutton thread roller which is said to roll external threads in hollow work on a high production basis is available in the form of a brief bulletin. The bulletin states that the company's Rollmaster Model 300 can roll-thread ½ in.-13 hollow set screws at a rate of 19,440 per hr. Production is proportionately higher on smaller units. Range is tentatively set at ¼ to 1 in. diam. *D. H. Prutton Machinery Co.*

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Plate resistors

E C & M Tab-Weld-X Plate Resistors for controllers, starters and other low-current resistor applications are covered in a new technical bulletin. Resistor sections are available in several capacities for small hp controller and starter duty. *Electric Controller & Mfg. Co.*

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Plastic parts

Dimco-Gray Co.'s line of stock molded-plastic parts is outlined in a new circular. Among the units available for prompt delivery are many types of knobs, handwheels and terminal boards. *Dimco-Gray Co.*

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Insulation

Properties and processing of silicone rubber as an insulating material for wire and cable are described in a new bulletin. A section on applications deals in detail with use of heat and flame resistant material for Navy and ignition cable. *General Electric Co.*

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Machine tools

An extensive line of machine tools is detailed in a new two-part folder. The first section covers Sundstrand automatic lathes, milling machines, centering machines, special machines and accessories. In the second part, American broaching machines and tools, hydraulic presses and special machinery are illustrated and described. *Sundstrand Machine Tool Co.*

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Honing

Micromatic Microhoning and Hydrohoning equipment for processing of cylindrical surfaces is presented in a catalog. An insert sheet is included containing specifications of the company's new Model 450 Hydroner machine. Tools and accessories are also pictured and described. *Micromatic Hone Corp.*

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Pumps

Two recent publications on pumps and pumping problems have been released by Geo. D. Roper Corp. *How to Solve Pumping Problems* contains a general explanation of rotary gear pumps and solves sample problems concerning hydraulic systems, general transfer and pressure transfer. There is also a technical data section. The other leaflet describes Roper rotary pumps. *Geo. D. Roper Corp.*

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Lathes

Both bench and floor-type lathes are covered in South Bend Lathe Works' new 12-p. brochure. A wide selection of attachments and accessories for lathes are also presented. *South Bend Lathe Works.*

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Filters

Two bulletins are available covering U. S. Hoffman Machinery Corp.'s pressure and cartridge filters. Cutaway drawings which illustrate the operation principles of the different types of filters are included, in addition to complete specifications. *U. S. Hoffman Machinery Corp.*

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Blast cleaning

A recently issued pocket-size booklet illustrates the Pangborn Corp.'s line of small standard units for blast cleaning and dust collection. There is a listing of possible industrial applications for the equipment shown. Prices for all units are given. *Pangborn Corp.*

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Salvage rejects

Spirabond Wire, a self-bonding metallizing alloy can be used to speed reject salvage in a wide range of production applications. It is said to be particularly valuable in building up parts which have been machined undersize or damaged by tool marks. Application is simple and use of Spirabond Wire is said to improve bearing surfaces. Further information is given in a new circular. *Metallizing Engineering Co., Inc.*

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Furnaces

Hevi Duty Electric Co.'s shaker hearth furnace was specifically designed for bright hardening, bright carburizing, bright dry cyaniding and similar heat-treating operations requiring temperatures up to 1900°F. Features of these units, including low power cost, uniform results, production line installation and case-hardening control, are presented in a new bulletin. *Hevi Duty Electric Co.*

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Heaters

Some of the advantages of Dravo heaters, such as low cost, easy installation, automatic operation, mobility and flexibility are briefly discussed in a new folder. For the most part, however, the bulletin summarizes the types of case history reports of solutions of different space-heating problems which can be obtained from the company. *Dravo Corp.*

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Fork trucks

A new all-products folder has been issued by Lewis-Shepard covering its line of industrial fork trucks, stackers, hoisters and working height lifters, skid platforms and other hand units. Many of the company's new model Spacemaster fork trucks are illustrated and described. *Lewis-Shepard Products, Inc.*

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31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
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"Robby's" rapid adjustment and constructive contributions to civic affairs resulted in acclaim as "man of the year" by the local newspaper.

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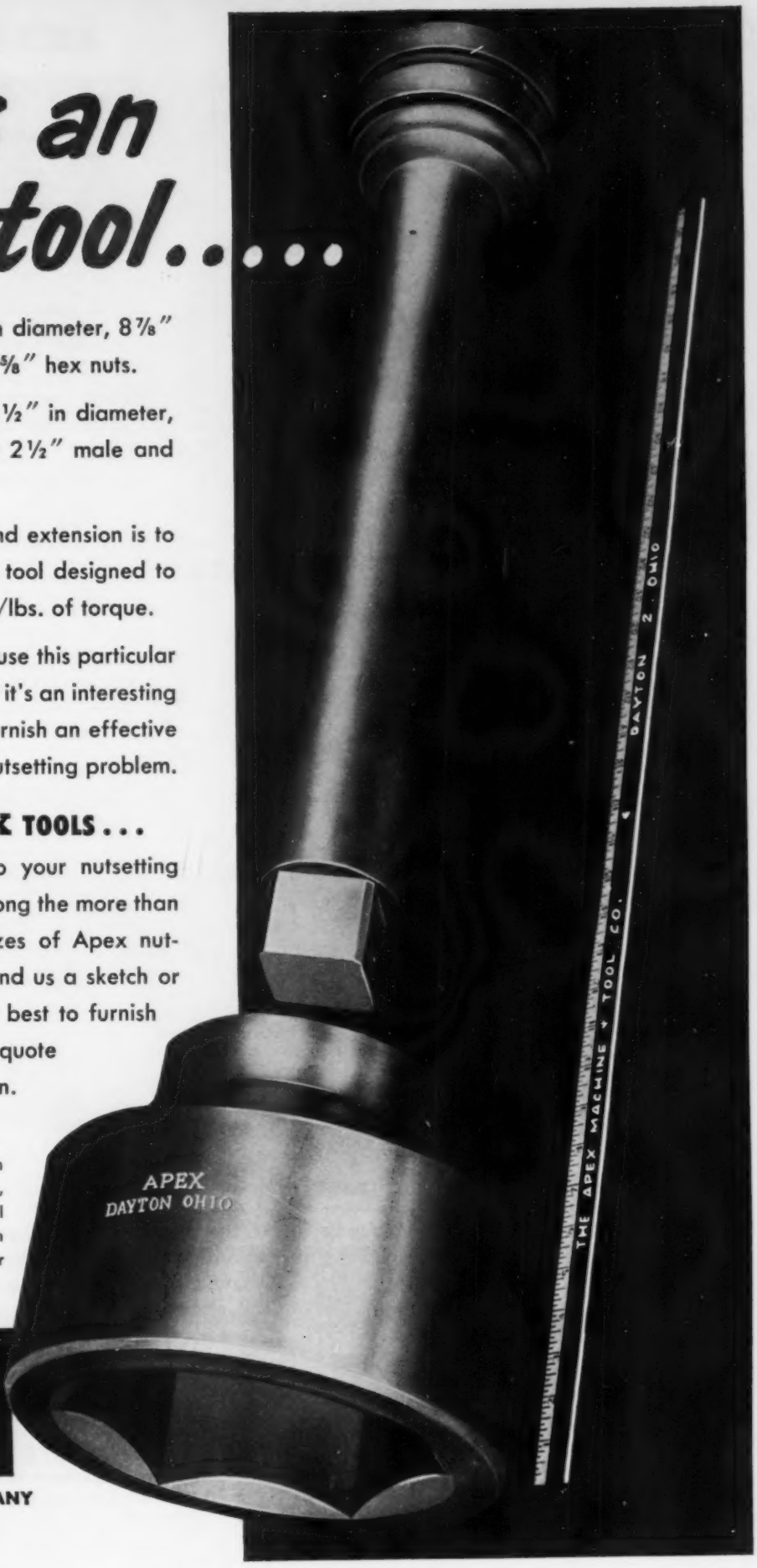

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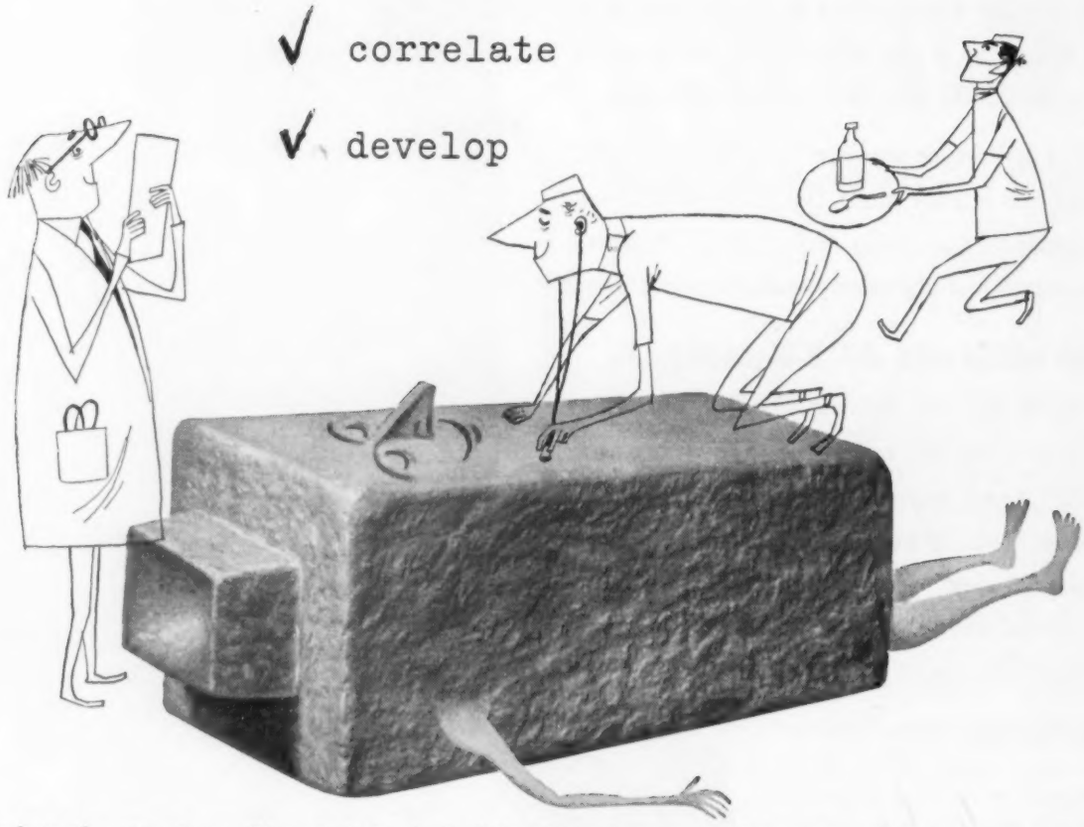

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ADVERTISERS IN THIS ISSUE

A

Aaron Machinery Co., Inc. 191
Accurate Perforating Co. 173
Acme Steel Co. 96
Acme Tank & Welding Div. United Tool & Die Co. 149
Allegheny Ludlum Steel Corp..... 162
Aluminum Import Corp. 26
American Air Compressor Corp... 190
American Hoist & Derrick Co..... 34
American Lava Corp. 148
American Pulverizer Co. 154
American Welding & Mfg. Co..... 94
American Wheelabrator & Equipment Corp. 118, 119
American Zinc Sales Co. 147
Angier Corp. 200
Apex Machine & Tool Co., The... 127
Armel, James P. 192
Armstrong Bros. Tool Co. 180
Atlas Car & Mfg. Co., The. 107

B

Baldwin-Lima-Hamilton Corp. 58
Belmont Iron Works 198
Beloit Foundry Co. 116
Belyea Co., Inc. 186
Benkart Steel & Supply Co. 190, 192, 193, 195
Bennett, Letcher W. & Sons 190
Bennett Machinery Co. 190
Bethlehem Steel Co. 1
Birdsboro Steel Fdry. & Machine Co. 59
Bliss, E. W. Co., Press Div..... 29
Boston Metals Co., The 193
Brandt, Charles T., Inc. 150
Brandt Machinery Co. 192
Brownell, Hazard Machine Tools, Inc. 192
Buffalo Bolt Co. 109
Builders Steel Supply Co. 195
Bullard Co., The 89

C

Calumet Iron & Supply Co..... 27
Carborundum Co., The Ferro Carbo Div. 47
Carpenter Steel Co., The 100
Central Steel & Wire Co. 39
Chicago Electric Co. 193
Cincinnati Gear Co., The 182
Cincinnati Gilbert Machine Tool Co. 40
Cincinnati Machinery Co., Inc.... 191
Cincinnati Milling Machine Co., The 92
Cincinnati Shaper Co., The 4
Clark Bros. Bolt Co. 173
Clark Equipment Co. 192
Clark Equipment Co. Industrial Truck Div. 115
Clearing Machine Corp. 70
Cleveland Steel Tool Co., The.... 199
Colorado Fuel & Iron Corp., The Wickwire Spencer Steel Div..... 122
Columbus McKinnon Chain Corp.. 179
Commercial Contracting Corp... 184
Consolidated Railway Equipment Co. 194
Cowles Tool Co. 199
Crawford, F. H., & Co., Inc..... 192
Crucible Steel Co. of America... 64
Curry, Albert & Co., Inc. 190
Cutler-Hammer, Inc. .....Back Cover

D

Dalton Supply Co. 192
Danly Machine Specialties, Inc. 62, 63
Davis, Samuel M. 194
Delta-Rockwell Power Tool Div... 56
Detroit Broach Co. 67
Diamond Manufacturing Co. 199
Donahue Steel Products Co..... 188
Dony, D. E., Machinery Co..... 191
Dreis & Krump Mfg. Co. 173
Duluth Iron & Metal Co. 194
Dykem Company, The 197

E

E. & E. Engineering Co..... 30
Eastern Machine Screw Corp., The 185
Eastern Machinery Co., The..... 189
Eastman Kodak Co. 151
Easton Car & Construction Co.... 181
Electric Controller & Mfg. Co.... 102
Electric Equipment Co. 193
Electric Storage Battery Co., The 14, 15
Enterprise Galvanizing Co. 198
Erie Foundry Co. 38
Espen-Lucas Machine Works, The 185
Eveready Supply 192

F

Falk Machinery Co. 192
Fate-Root-Heath Co. 42
Federal Products Corp. 13
Follansbee Steel Corp. 120
Foote Bros. Gear & Machine Corp. 101
Foster, L. B., Co. 194
Frank, M. K. 195
Frasse, Peter A., & Co., Inc..... 43
Fried Steel Equipment Mfg. Co... 182

G

General Electric Co. 20, 21
Gibson Mfg. Corp. 194
Gisholt Machine Co. 24
Glazer Steel Corporation 192
Goodman Electric Machinery Co.. 195
Goodyear Tire & Rubber Co..... 10
Goss & DeLeeuw Machine Co..... 185
Graphic Systems 183
Gray, G. A., Co., The 12
Greaves Machine Tool Co. 173
Greenpoint Iron & Pipe Co., Inc.. 194
Griffin Manufacturing Co. 66

H

Hayward Company, The 185
Hendrick Manufacturing Co..... 181
Hewitt-Robins, Inc. 48, 49
Hoskins Manufacturing Co. Inside Front Cover
Hubbard, M. D., Spring Co..... 197
Hughes, Arnold Co. 194, 195
Hyatt Bearings Div. General Motors Corp. 16
Hydraulic Press Mfg. Co., The... 61
Hyman, Joseph & Sons 188
Hyman-Michaels Co. 195

I

Ingalls Iron Works Co., Inc., The 76
Inland Steel Co. 128
Iron & Steel Products, Inc..... 189

J

Johns-Manville Corp. 41
Judson Research & Mfg. Co..... 190

K

Kaiser Aluminum & Chemical Sales, Inc. 60, 165
Kaydon Engineering Corp., The.. 105
Kemp, C. M. Mfg. Co., The..... 111
Kenilworth Steel Co., The 9
Kinderman, Lou F. 188
King, Andrew Co., The 199
Kings County Machinery Exchange 190, 194

(Continued on Page 198)

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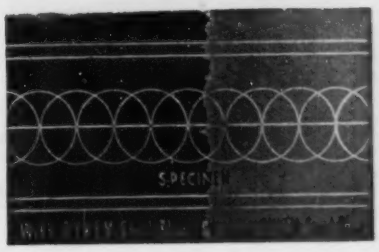

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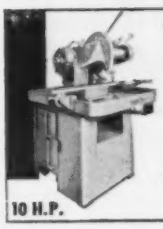

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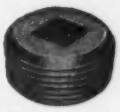

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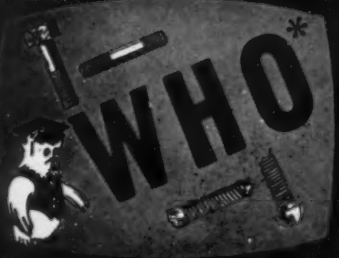

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ADVERTISERS IN THIS ISSUE

(Continued from Page 197)

Kinnear Manufacturing Co., The.. 159
Knox, Earl E., Co. 192
Koppers Co., Inc., Tar Products Div. 169
Kramer, P. S. 195

L

Lamson & Sessions Co., The 19
Lancaster Malleable Castings Co. 185
Land, L. J., Inc. 193
Lang Machinery Co. 192
Lansing Stamping Co. 183
La Salle Steel Co. 44
Lebanon Steel Foundry 113
Leland-Gifford Co. 199
Levinson Steel Co., The 50
Lewthwaite, T. H., Machine Co., Inc. 198
Littell, F. J., Machine Co. 184
Luria Bros. & Co., Inc. 171

M

M. E. T. Equipment & Construction Co. 193
MacCabe, T. B., Co. 193
Mackintosh-Hemphill Co. 25
Manning, Maxwell & Moore, Inc.. 157
Maxwell Machinery Corp. 190
Metal & Thermit Corp. 28
Midvale Company 85
Miles Machinery Co. 188
Mine Safety Appliances Co..... 183
Moline Tool Co. 199
Moorhead Elect. Mach'y Co. 193
Morey Machinery Co., Inc.....66, 191
Morris Machine Tool Co. 90
Morrison Railway Supply Corp... 194
Mt. Vernon Die Casting Corp..... 192

N

National Automatic Tool Co..... 51
National Machinery Exchange.... 191
National Steel Corp. 55
Nelson Stud Welding Div. Gregory Industries, Inc. 126
New Departure Div. General Motors Corp. .....Front Cover
New Era Mfg. Co. 192
Nicholson File Co. 45
Norton Company, Machine Division 22, 23

O

O'Brien Machinery Co., The..... 190
O'Connell Machinery Co. 188
Oakite Products, Inc. 86
Ohio Crankshaft Co., The 57
Ohio Locomotive Crane Co., The 185
O'Neill, A. J. 192
Orton Crane & Shovel Co. 117
Osborn Mfg. Co., The 5
Ottemiller, Wm. H., Co. 197

P

Pangborn Corp.....Inside Back Cover
Pellets, Inc. 185
Perkins Machine & Gear Co..... 81
Philipp Brothers, Inc. 167
Pittsburgh Lectromelt Furnace Corp. 46
Pittsburgh Plug & Products Co.... 197
Platt Bros. & Co., The 197
Plymouth Locomotive Works Div. of The Fate-Root-Heath Co..... 42
Production Steel Strip Corp..... 87
Purdy Company, The 194

R

Rail & Industrial Equip. Co., Inc. 195
Reading Crane & Hoist Corp..... 180
Reliance Steel Div., Detroit Steel Corp. 36
Republic Steel Corp. 10, 32
Rhode Island Tool Co..... 38
Ritterbush & Co., Inc. 187
Roebling's, John A. Sons Corp... 17
Ruthman Machinery Co., The ... 66
Ryerson, Jos. T., & Son, Inc..... 6

S

Salem-Brosius, Inc. 53
Sauereisen Cements Co. 198
Sharon Steel Corp. 8
Shenango-Penn Mold Co. 114
Shepard Niles Crane & Hoist Corp. 186
Shimer, Samuel J., & Sons, Inc... 198
Shore Instrument & Manufacturing Co., The 198
Smith, G. T. 192
Standard Iron & Steel Co..... 195
Standard Tube Co. 112
Stanhope, R. C., Inc. 195
Steel & Tube Div. Timken Roller Bearing Co. 31
Stephenson, Dell, & Co. 194, 195
Stone, R. J. 195
Sun Oil Co. 90
Superior Tube Co. 160

T

Tabor Manufacturing Co., The . 197
Thomas Flexible Coupling Co.... 156
Timken Roller Bearing Co., The Steel & Tube Div. 31
Tractor & Equipment Co. 194
Triplex Machine Tool Corp..... 158

U

Udylite Corp., The 125
Union Drawn Steel Div. Republic Steel Corp. 32
United Engineering & Foundry Co. 35
United Wire & Supply Corp..... 11
United States Steel Corp. 60
United States Steel Supply Div. United States Steel Corp..... 60

V

Vacu-Blast Co., Inc. 153

W

Wallack Bros. 195
Wallingford Steel Co., The..... 152
Walworth Steel Co., The 173
Wean Engineering Co., Inc., The 33
Webb Corp., The 66
Weirton Steel Co. 55
Weiss, B. M., Co. 192, 194
Weiss Steel Co,. Inc. 195
Wheelock Lovejoy & Co., Inc.... 80
Wheland Co., The 183
Wickwire Spencer Steel Div. The Colorado Fuel & Iron Corp..... 122
Williams, Edward Hale 194
Willson Products, Inc. 155
Wilmot Engineering Co. 124
Wood, R. D., Co. 65

Y

Yoder Co., The 37
Youngstown Sheet & Tube Co., The 54
Youngstown Steel Car Corp..... 199

CLASSIFIED SECTION

Business Opportunities .....
Clearing House 186-195
Contract Manufacturing Appears in first and third issue of each month. See March 5 and March 19
Employment Exchange 196
Wanted 195

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MACHINE TOOLS
have cut production costs for American Industry.
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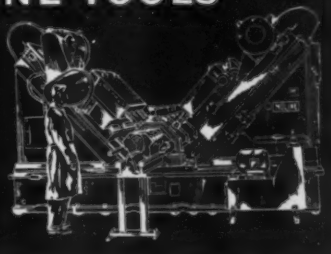
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Boring V-8 Engine Cylinders

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Punches, Dies, Chisels, Rivet Sets
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A hardness tester particularly adapted for use on CASTINGS and FORGINGS
Puts an actual load of 3000kg on a 10mm ball.
Throat, 4" deep.
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Can be used in any position—even upside down.
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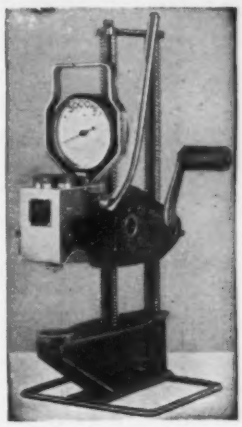
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Large scale producers of . . . big weldments on a production basis — die pressed channels for bus, truck and trailer chassis — railway cars, repairs and parts — miscellaneous heavy presswork.

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STOPS RUST of Army rifles

Ever degrease a rifle . . . or use grease to protect the metal products you make?

That paper rifle bag you see in the Army photo gives off a vapor inside that prevents corrosion. It *saves greasing* and all the handling and equipment that goes with it. *Saves degreasing*—hours of it! No wonder firms in every branch of metalworking today are using Angier's vapor rust preventive—VPI Wrap. How about *you?*

Get "VPI FACTS" now, from the most experienced name in vapor wraps:
ANGIER CORPORATION
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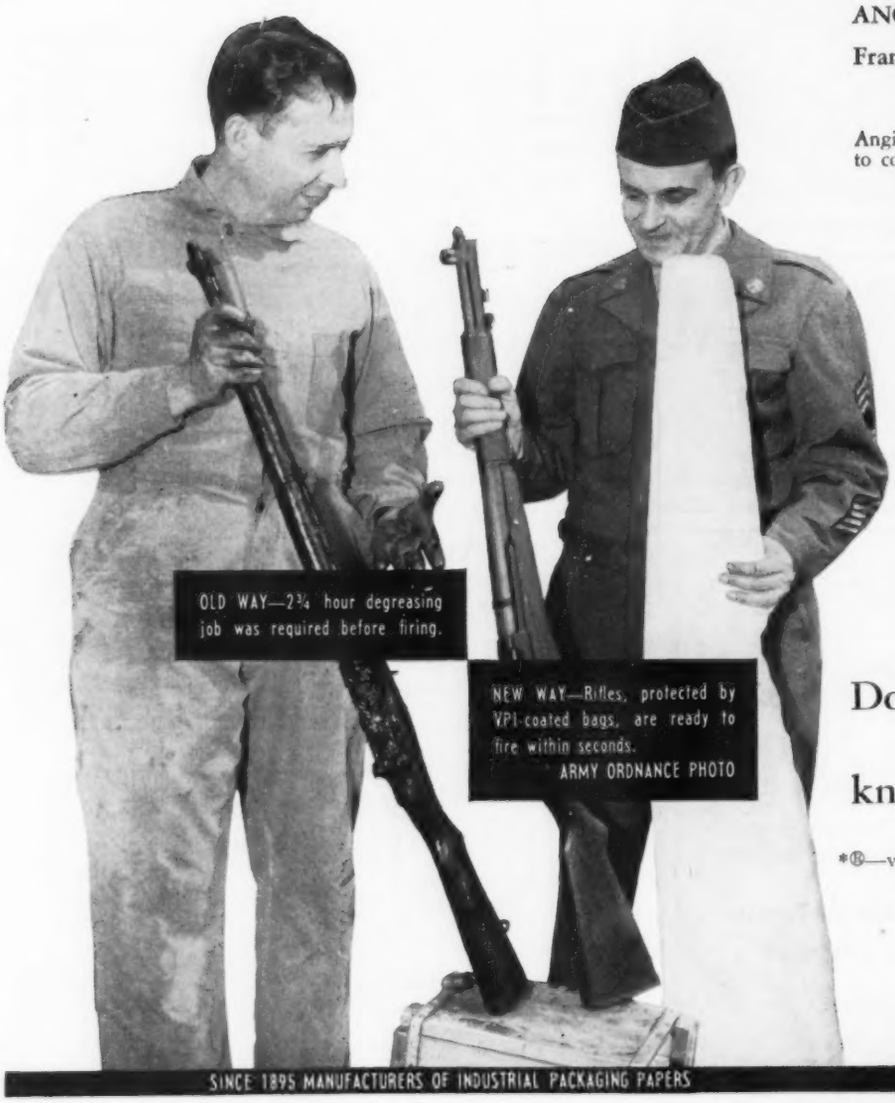
Angier VPI Wrap (2 gram) is manufactured to conform to MIL-P-3420


OLD WAY—2¾ hour degreasing job was required before firing.
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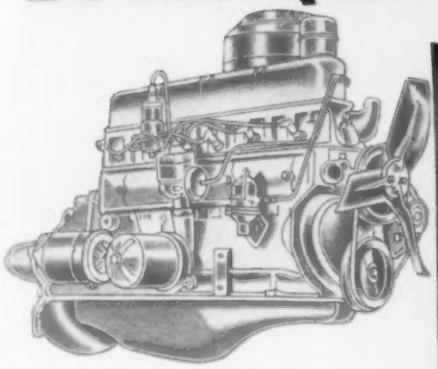
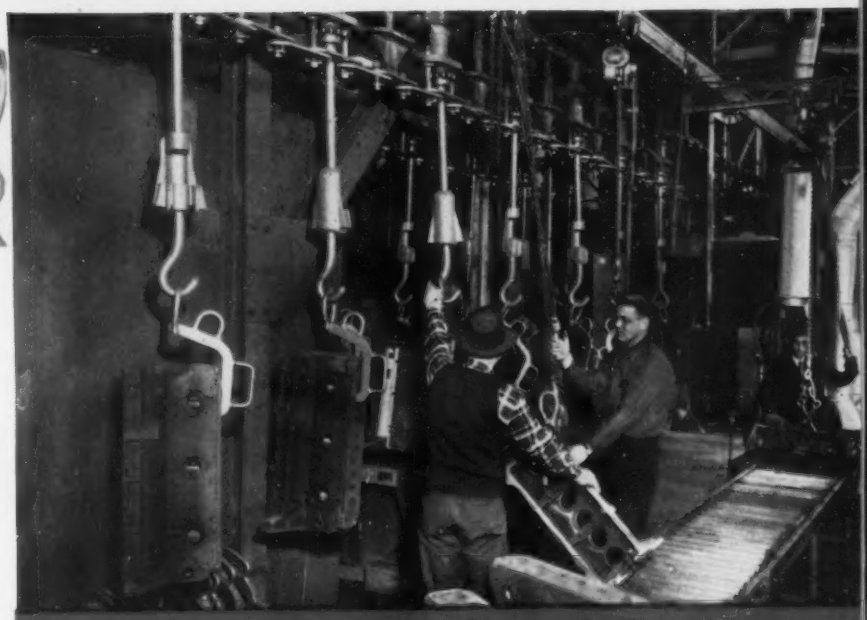
5 PANGBORN SPECIAL ROTOBLASTS Do Top QUALITY Job for FORD



Clean 80 tons of castings an hour at the Ford Cleveland Foundry

At no point are Ford's quality requirements more exacting than at its new Cleveland foundry—production show-place of the Ford Motor Company. That's why it's important that Ford chose Pangborn Special ROTOBLAST® Cleaning Machines to handle the major part of this foundry's blast cleaning. The total output of these five monorail machines will be 80 tons of castings cleaned per hour.

Ford picked Pangborn because parts must be cleaned *perfectly*, even beyond the demands of adequate performance—and *quickly*, to keep pace with other production processes, to keep costs in line! Pangborn can give *you* the same better, faster, cheaper performance. If you have *any* blast cleaning problem, write today for Bulletin 214. Write to: PANGBORN CORPORATION, 1500 Pangborn Boulevard, Hagerstown, Maryland.



Pangborn Machine #2 cleaning cylinder blocks. Worker at right transfers castings from grinder to station where two workers in center foreground load them on conveyor hooks for cleaning.

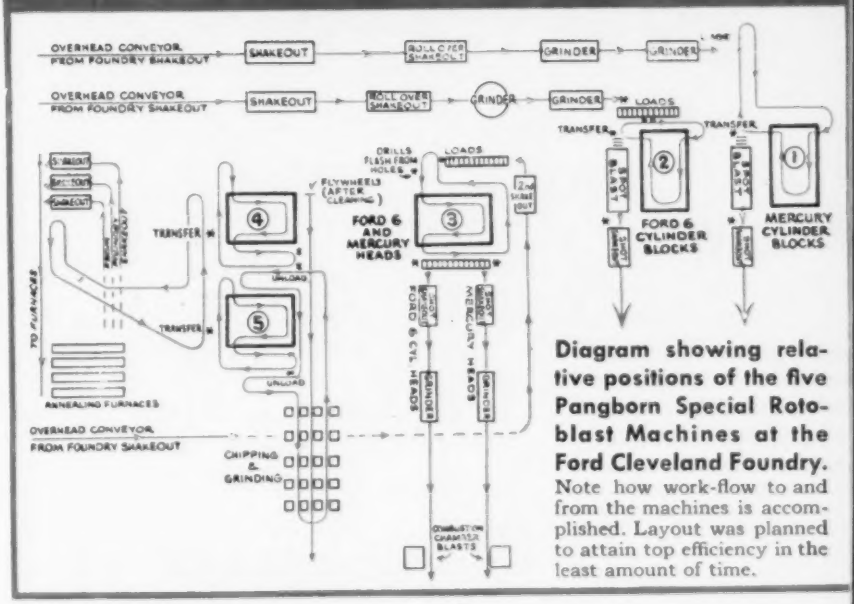


Diagram showing relative positions of the five Pangborn Special Rotoblast Machines at the Ford Cleveland Foundry. Note how work-flow to and from the machines is accomplished. Layout was planned to attain top efficiency in the least amount of time.

OVER 28,000 PANGBORN MACHINES SERVING INDUSTRY

Look to Pangborn for the latest developments in Blast Cleaning and Dust Control equipment

Pangborn

BLAST CLEANS CHEAPER

with the right equipment for every job

Choice of the Leaders

CUTLER-HAMMER
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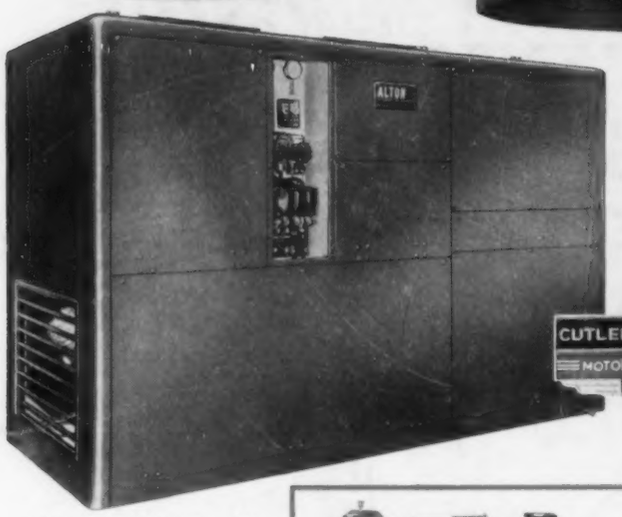
The Mark of Better Machines



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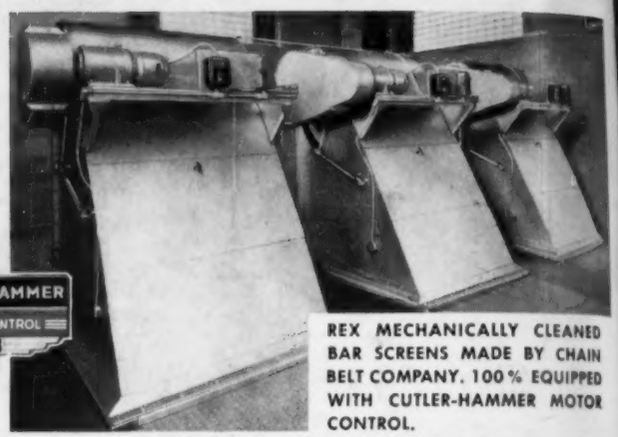
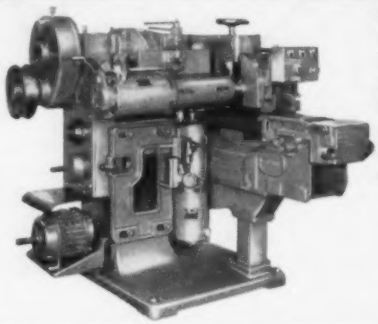


REX MECHANICALLY CLEANED BAR SCREENS MADE BY CHAIN BELT COMPANY. 100% EQUIPPED WITH CUTLER-HAMMER MOTOR CONTROL.



LANDIS 40" x 216" HYDRAULIC GRINDING MACHINE MADE BY LANDIS TOOL CO. EQUIPPED WITH CUTLER-HAMMER MOTOR CONTROL.

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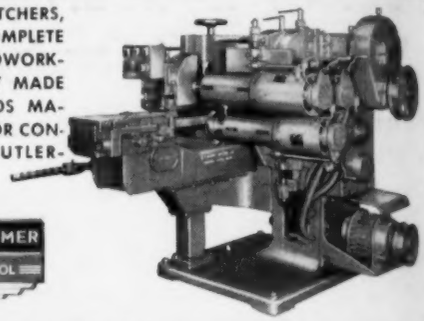

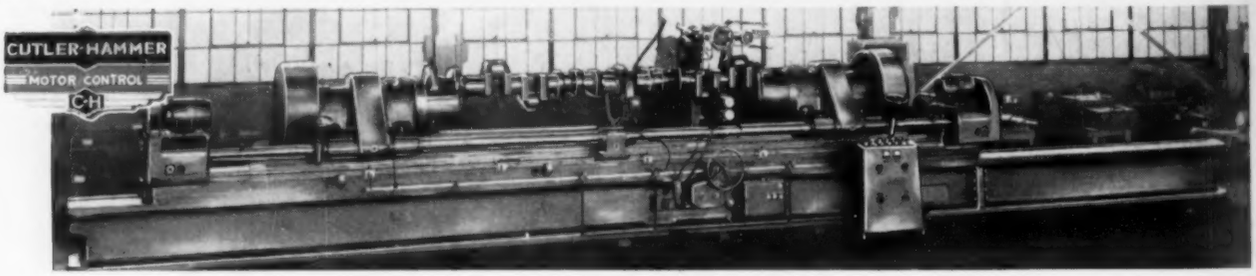

The road to Leadership

A market leader does better business . . . makes more money. . . has a firmer foothold than much of his competition. These commercial and practical aspects of market leadership result from the market's continuing preference for the products that he makes. His products are simply rated as superior. They better meet the users' needs and requirements. But such performance can only reflect what's *in* the products. Therefore any manufacturer seeking to govern and so predict the performance of his product in the user's hands must know and dictate the quality of the parts. *This* is the way the manufacturer can influence his market. *This* is the road to leadership.

Under the circumstances it is not surprising that leading machinery manufacturers so continuously and repeatedly select Cutler-Hammer Motor Control for their machines. Known dependability is vital where leadership is to be maintained. And Cutler-Hammer Motor Control must be a profitable choice for you. CUTLER-HAMMER, Inc., 1325 St. Paul Ave., Milwaukee 1, Wisconsin. *Associate:* Canadian Cutler-Hammer, Ltd., Toronto, Ontario.

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